Farm Communities at the Crossroads

CHALLENGE AND RESISTANCE

Dwayne Harty

EDITED BY

HARRY P. DIAZ, JOANN JAFFE AND ROBERT STIRLING

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edited by Harry P. Diaz, JoAnn Jaffe and Robert Stirling

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REGINA

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Contents

SECTION 1: INTRODUCTION

Introduction
JoAnn Jaffe 3

SECTION 2: THE IMPORTANCE OF WORK

Mapping the Labour Process Debate
Bob Russell 15

Degradation of Farm Work in the Canadian Prairies
Harry P. Diaz and Robert Stirling 31

Canola: A Cinderella Story
Lawrence Busch 45

SECTION 3: COMMUNITY

Innovation, Durable Communities, and Long-Haul Economies
Michael E. Gertler 55

The Myth of the Family Farm
Sharon Butala 67

Building Community as a Response to Globalization
Christopher Lind 77

School, Knowledge and Skills in the Farm Community
Harry P. Diaz 91

Resistance to the Farm Crisis: Churches, Farm Groups and the Farm Stress Line
Wendee Kubik 107

Farming in Saskatchewan in the 1990s: Stress and Coping
Wendee Kubik and Robert Moore 119

SECTION 4: LAND AND TRANSPORTATION

Family Labour Processes, Land, and the Farm Crisis in Saskatchewan
JoAnn Jaffe 137

The Saskatchewan Land Bank: An Experiment in Land Reform, 1971–82
Lynn Gidluck 149

Proposal for a Non-equity Co-operative Farm Model
Bev Currie 165

The Nebraska Center for Rural Affairs' Land Link Program
Marty Strange, Nancy Thompson, Allen Prosch and Joy Johnson 173

Saskatchewan Short Line Rails
Paul Beingessner 191

SECTION 5: CHEMICALS

Agricultural Chemicals and Agri-business
Greg Argue, Bob Stirling and Polo Diaz 207

Sustainable Alternatives for Saskatchewan Agriculture: A Farmer's Perspective
Ian Cushon 223

Game Farming and Biodiversity
C.C. (Red) Williams 237

SECTION 6: MACHINERY

Co-operative Intervention in the Farm Machinery Market: The Case of Canadian Co-operative Implements Limited
Doug Faller 243

Tractor Guidance Systems and the Family Farm
Ronald J. Palmer 259
The Adoption of Conservation Tillage: An Understanding of the Social Contexts
Alan Hall 267

SECTION 7: GLOBALIZATION AND THE STATE

Globalization, Economic Development and Canadian Agricultural Policy
Murray Knuttila 289
Industrial Agriculture Comes to Saskatchewan
John W. Warnock 303
The Decline of Agrarian Radicalism on the Canadian Plains
Roy Atkinson and James N. McCrorie 323
Farm Income Support Systems—In Whose Interests? An Examination of Policy Objectives
Ken Jensen 329
Workers' Health and Safety: Local Knowledge and Control
Adriane Paavo 335
Index 341
Contributors 353

SECTION 1

INTRODUCTION

Introduction[1]

JoAnn Jaffe

The family started farming almost a century ago on a homestead quarter and nearby land that their great-grandparents acquired during the pioneer days. Today they work six sections, having gotten larger particularly in the last 30 years. They started out farming King Wheat, dairy cattle, pigs, chickens, oats, barley, and a variety of vegetables to eat and put up. They were able to feed the animals with grain they themselves grew, and they used the manure to fertilize their crops. When their great-grandparents first moved to Saskatchewan, they didn't know their neighbours—now there aren't many neighbours to know.

The operation has changed, and the family finds it has to continue to be willing to respond to changing conditions. They still grow a lot of wheat, but they're always willing to try a new crop if it looks like it can turn a profit. They're having a vigorous debate around the kitchen table whether to go no-till or organic. They know they don't want to grow GMO canola, but they suspect they've already got resistant weeds from the pollen blowing over from their neighbour's farm. They wonder about the objectivity of extension, given the dedication of the province to promoting the biotech industry. They still have cattle, though many gave them up years ago. Their vet gives them what they feel is contradictory advice, suggesting new products that would boost production, but being unwilling to vouch for their safety.

The wife also works in town. She has a lot more to do now that his dad can't live alone. He has heart trouble and is getting forgetful, but there's a long waiting list at the only long-term care facility in the district. There's a lot of pressure to

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[1] As editors of this volume, we are untroubled by the order in which our names appear. We have chosen the alphabetical ordering. Each has made important contributions to the volume and we also accept responsibility for errors and oversights.

bring in a good income—the kids want what their friends in town have, and there's always something that needs to be bought for the farm.

They have up and down years, but so far have managed to avoid the worst. It's work to stay on top of equipment maintenance and what's going on in the field. Where formerly they would have driven their tractor to a neighbour's for servicing, now they have to load it onto a flatbed and drive it 200 kilometers. They watch the markets, and find it stressful to keep up with the latest in herbicide rotations, new seed varieties, environmental regulations, pharmaceuticals, accounting principles, and computer software.

Now they're thinking about getting into hogs as part of a new generation co-operative. They belong to two co-ops, but faith in this model has been shaken by recent events. They've been part of the group that's trying to diversify the local economy, but it's hard to get people to invest when so much has already been lost. They're making more and more trips to the city, but feeling an increasing estrangement from urban people. Organized labour has felt like the enemy, but next year when their daughter graduates from nursing school and gets a job, she'll belong to a union. Local politics has changed, too. They're increasingly aware that they need to have a different relationship with their Aboriginal neighbours and the Hutterites, but no-one seems to know how that can be achieved. They've exhausted themselves fighting consolidation. They've fought too many losing battles—they lost their elevator, their rail line, their school, the Pool went public—now they're just supposed to look out for themselves and be good business people and pursue their market contacts and contracts. Some of the chickens are coming home to roost. They didn't raise enough of a fuss when their neighbours went out of business in the 60s, 70s and 80s. There's been too much disinvestment in the local community, with too many people taking their money and putting it where it will bring them a higher return. Even their own household is split in how to vote nowadays. And when you really look at their platforms, none of the parties seems particularly interested in the fate of rural people.

They love their farm and their local community, but they aren't encouraging their children to take over the operation. Besides, none of the kids wants to take on the burdens that they see their parents wrestling with daily. Their own retirement plans are absolutely unclear. They don't know where they'll get the money to finance it, and they don't know where they or their children will be. They don't see much of a future in farming, feeling that with increasing consolidation, "Sometime soon, all of Saskatchewan will end up being farmed by 100 incorporated mega-operators."

In the last 50 years, farming and farm communities have been subject to relentless change in the face of an uncertain future. The changing nature of work, farm-firm consolidation, and increasing control by agribusiness have had a deep impact on farm families, because their lives are organized by the work they do on the farm. These processes have had wide effect throughout rural society. Day-to-day farm work takes place in the context of community—social relations provide much of the invisible web that allows production to take place. Rural communities, in turn, derive much of their character from the farm work done there. Simply put, rural communities live or die according to the health of the farms that are attached to them, and farms cannot survive without healthy communities.

This book is an outgrowth of a conference held at the University of Regina (Regina, Saskatchewan) in 1995.[2] At that time, academics and farm activists came together to analyze transformations in farming and farm communities, and to discuss what might be done to achieve a more socially responsible development. Our interest was at once scholarly and political. As committed academics and activists, we viewed these changes as contributing to a degradation of work and social life. We also believed that rural people and other citizens are searching for ways to fight back and resist the changes being foisted on them.

We have used the term "crossroads" to name the Regina conference and this book. The pace of change in work and rural society has proceeded so rapidly that every new development appears to be a crossroads in which something precious is in danger of being left behind, but something valuable may be gained if only we take the right route. These crossroads indicate that the future is not a foregone conclusion.

Crossroads are an important source of symbolism for us as we have thought about our work, as they have been for many across time and space. The crossroads figure prominently in many Great Traditions.[3]

A crossroads is typically four corners that represent a choice: one can go forward in the same direction, turn around and retrace one's route, or make a turn to the right or left. One can also miss the turn and hit the ditch, or one can deliberately chart a new trail cross-country. Crossroads always imply the road you take *and* the road(s) not taken. As you move on, you abandon the alternative routes that others might be choosing.

The crossroads is a place of gathering and excitement, for meeting and organizing. Land values are higher at the crossroads, reflecting this opportunity—and the opportunity to sell to those who linger or pass through. The crossroads is a point of entry and exit or departure. The crossroads is a node in a network, through which one can access resources and allies that enrich life in the local community. But a network may also drain off capital, labour, energy and allegiances. In rural Saskatchewan, the crossroads also symbolizes an enormous public investment in infrastructure, and the real costs of distance and travel. The crossroads is a place for crossings—a place of transitions and intermingling of people and ideas. When the crossroads is empty, it is a place of heightened loneliness.

In Latin, the word *crucis*, or *crux*, referred to the cross shape of the crossroads, and came to mean "a guidepost that gives directions at a place where one road becomes two." This metaphor of a signpost is implicit in the related word "crucial," which means "of supreme importance, critical." When we get to the crux of the matter, we come to the part that is most essential.

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[2] We gratefully acknowledge the support of the Social Sciences and Humanities Research Council of Canada, Grant #484-90-0027, for both this conference and the larger research project of which this conference was a part.

[3] In Haitian *Vodoun*—as in the African religions from which it is derived—the crossroads represent the intersection of two planes of the metaphysical and physical worlds. It is thus the place where communication with the divine world is possible, and where traffic of the energy and forces between the worlds is most likely. In Native Canadian/American traditions the crossroads is the intersection of the four cardinal directions; the four elements of earth, air, fire and water and the four seasons. Our attention is focused both at the points of origin and destination, and at the circular trip around the quadrants.

To be at a crossroads means that we must be alert and on-guard, open to many influences, and that we can choose another path. This book is organized conceptually around the themes of challenge and resistance, or—to continue the metaphor of arriving at a crossroads—how we got to this intersection, and what roads can be taken to steer a new course. The one direction that is not open to us is going back the way we came.

An essential part of our own perspective is rooted in the critique developed by Braverman (1974), widely known as the "deskilling hypothesis." This critique builds on the Marxist concept of alienation, a concept that refers to the process of dehumanization resulting from the loss of creativity and control over one's labour under capitalism. In spite of its name, Braverman's concept of deskilling is less about losing the knowledge of how to do some particular kind of task than it is about the degradation of the quality of work and loss of control over the labour process. In Braverman's formulation, capitalist efforts to control the workforce and make maximum profits leads to a deskilling bias in technology best exemplified by the separation of "conception" from "execution" in the labour process. This permits management—the conceivers—to have more power over the work done by labour—the executors. In this process, people become extensions of machines, or tools to perform a task, the how and why of which is decided elsewhere. Although this critique is most commonly applied to industrial production, we believe that it has validity for the farm labour process, as well.

This analysis of capitalism's effect on the labour process has undergone considerable criticism from social scientists who question whether the average worker is progressively employing less skill than previously. According to Braverman (1974: 424–25):

> the phrase upon which the issue turns is "average skill." Since, with the development of technology and the application to it of the fundamental sciences, the labour processes of society have come to embody a greater amount of scientific knowledge, clearly the "average" scientific, technical, and in that sense "skill" content of these labour processes is much greater now than in the past. But this is nothing but a tautology. The question is precisely whether the scientific and "educated" content of labour tends toward averaging, or, on the contrary, toward *polarization*. If the latter is the case, to then say that the "average" skill has been raised is to adopt the logic of the statistician who, with one foot in the fire and the other in ice water, will tell you that "on the average," he is perfectly comfortable. The mass of workers gain nothing from the fact that the decline in their command over the labour process is more than compensated for by the increasing command on the part of managers and engineers. On the contrary, not only does their skill fall in an absolute sense (in that they lose craft and traditional abilities without gaining new abilities adequate to compensate the loss), but it falls even more in a relative sense. The more science is incorporated into the labour process, the less the worker understands of the process; the more sophisticated an intellectual product the machine becomes, the less control and comprehension of the machine the worker has. In other words, the more the worker needs to know in order to remain a human being at work, the less does he or she know. This is the chasm which the notion of "average skill" conceals.

This question is one with considerable relevance for farm labour processes in that farmers need to know about an increasingly broad range of topics. An important issue for those studying deskilling in the agricultural labour process, thus, is the relationship of breadth to depth of skill. To what degree do farmers retain their depth of knowledge over the range of tasks performed? Furthermore, an important question is the issue of control over work and on-farm decision-making. To what degree are farmers autonomous in their decisions and choices of how and what to farm, and to what degree are they constrained in those decisions and choices? Braverman (1974: 21) does not say that technology per se produces this loss of control and degradation of work, but rather that the "mode of production" we see around us, the manner in which the labour processes are organized and carried out is the "product" of the social relations we know as capitalist. Thus, "Within the capitalist firm it is the social forms that dominate technology, rather than the other way around."

Bob Russell's paper in this volume begins our collective examination of the changing nature of work by applying the deskilling critique to Canadian industry. He finds that different industries have different levels of deskilling, relating in large part to the level of worker struggle over the production process. In general, he states that the deskilling of workers in this present period of down-sizing and re-engineered labour processes has come to be overshadowed by the intensification of work. While it is arguable whether industrial workers employ less knowledge in their work today than in days past, one can conclude that workers increasingly lack control over the conditions of work.

Bob Stirling and Polo Diaz examine the question of deskilling from the standpoint of farm work. They argue that farmer dependence on corporations that control markets for inputs and outputs means that farming is just one phase in the total profit-making process. This dependence is reinforced by the continuously increasing complexity of technology sold to farmers. Since science—considered in western society to be the only valid knowledge—is institutionally constituted within universities, state research institutes, and corporate labs, farmers have limited possibilities to understand and control the technological processes in which they are enmeshed, and find it difficult to conceptualize and realize alternative farming systems. Using the example of canola—Saskatchewan's premier oilseed crop—Laurence Busch describes the processes by which social choices are made to appear to be purely technical, and conversely how technological change is deeply embedded in the social reality from which it emerges. Canola became the "cinderella crop" of the Canadian prairies, but not without the confluence of historical contingency, state support, farmer "necessity," corporate interests, and science. Busch contends that nature is not natural, that societies make nature through the categories used to classify, and the meanings and values assigned to natural things. The creation of the new crop, canola, which in its earlier incarnation had been called rapeseed, changed both nature and society at the same time.

The labour process in farming is enmeshed in local social relations. Michael Gertler argues that if community sustainability is to be about more than mere persistence, it must involve cultural change as well as social change. The culture of agriculture has come to emphasize a narrow, market-based rationality, with success measured primarily in financial terms. Community values have increasingly been subsumed by economic efficiency, which, ironically, undermines the operation of community. This poses a significant challenge to the development of sustainability, as an alternative system will necessarily be about a much wider conception of the purpose of work than just dollars and cents.

According to Sharon Butala, farmers cling to the farming way of life, precisely because they resist such a narrow conception of value. In spite of the hard life of never-ending demands, farmers think that rural life is the only life worth living. They talk of living a life in nature and of freedom—although that freedom is largely illusory, and exists only in being able to decide in the small matters of life. That being said, the present ongoing farm crisis has deprived farmers of their ability to be able to stay on the land, and the dream of rebuilding thriving rural communities that exists somewhere in prairie farmers' collective memories remains out of reach.

Chris Lind argues that the roots of this farm crisis unite it with crises affecting other sectors of society, such as fishing and manufacturing, in that they are all caused by globalization. Governments have been complicit in, and exacerbated, the scope of these crises by privileging economic considerations over all others. Rural community—that web of institutions which provide a context for, and the content of, social interaction in rural places—has been eroded in this process. Lind emphasizes that community can be rebuilt. In fact, he contends that the way to fight globalization is by intentionally building community. One essential ingredient of community is its ability to continue into the future. Polo Diaz' paper on high school students shows that rural communities are in jeopardy from the unwillingness of many teenagers to remain in rural areas or on the farm. Almost all females and most of the males in his survey seem eager to leave their communities after finishing school.

The ongoing farm crisis has also resulted in unprecedented levels of stress. Wendee Kubik explains that while some farmers have been unable to cope with the aftermath of stress, others have recognised the political economic nature of its origin and are thus dealing with it through resistance. Kubik's paper documents some of the groups that have been formed to combat the farm crisis, their goals, and how they have helped farm families. Kubik and Moore present a transactional model of farm stress that emphasises the interaction between personal psychology and social conditions. In this view, stress is created when people feel themselves to be without sufficient personal resources to meet changing circumstances. Dealing with stress, therefore, calls for solutions that address both personal and wider societal dimensions of the problem.

Many farmers and activists call for higher grain prices as a solution to the ongoing problems of agriculture. However, it is possible to see that—in the absence of other interventions—higher grain prices would lead to further rural depopulation as the price of land is bid up and farmers find it more attractive to sell. New farmers would also find it more difficult to enter farming. JoAnn Jaffe argues that the current crisis—as well as the apparent no-win solutions on offer—is grounded in the Dominion Lands Act of 1870 and the form of land tenure and production structure it created. Lynn Gidluck claims that the Saskatchewan Land Bank, created in 1972 and since abandoned by the provincial government, might have provided some answers. Although farmers who participated were largely satisfied with the program, the Land Bank was undone because it was too modest in scope, the provincial government was only partially committed to it, and ironically, because a bubble of rural economic prosperity drove the price of land up, making it too expensive for government to buy. The Land Bank, however, is not the only potential solution to land concentration and rural depopulation. In his paper, Bev Currie advances a proposal for non-equity cooperatives that he claims would blunt the link between property ownership and the well-being of farm families. The successful establishment of non-equity cooperatives would allow farming to be less affected by changing asset values. It would also significantly reduce the barriers to farming for young farmers. Marty Strange, Nancy Thompson, Allen Prosch and Joy Johnson offer yet another solution to the problem of intergenerational transfer and the problem of young farm entrance: the land-link program. Operational in Nebraska for more than a decade and copied in other states, this program successfully links young farmers who are looking to enter farming with older ones wanting to exit, and helps them to negotiate this critical juncture. Paul Beingessner analyses an institution formed at the same time as the Dominion Lands Act and with close links to the present system of property: the railroads. He finds that some remedy to rail-line abandonment, and its devastating effect on farmers and rural communities, can be found in community-operated short line rails.

Greg Argue, Bob Stirling and Polo Diaz claim that farmers are more successful in controlling knowledge in mechanical as opposed to agrochemical technologies. Originally, the primary methods of weed control on the Canadian prairies had been through tillage, using clean seed, and crop rotation. After World War II, farmers became reliant on patented chemicals that replaced cultural practices in weed control. It has been very difficult for prairie farm people to get to know and control this technology. Agrochemicals are an outcome of a historical process that links public science with the high-cost, private development of technologies. The result has been chemical commodities that are themselves the embodiment of profit-driven relations of knowledge and control. Ian Cushon documents many of the problems that are due to this model of conventional agriculture. He presents organic farming as a solution that can provide independence to farmers and increase their control and flexibility. Cushon claims that farmers need to gain the knowledge that will allow them to institute management systems that focus on cultural pest control and on-farm sources of fertility. In this way, they can build farming systems that are as productive as those that use capital-intensive technology. C.C. (Red) Williams argues that one proposed alternative to the present farming system, that of game farming, is not the panacea it appears to be. There has been much more effort put into obtaining quick and high profits for early entrants and investors than on developing the know-how and infrastructure that would establish game-farming as a sustainable industry.

Chemicals form just one part of the input equation for prairie farmers. The consequences of changes in machinery for farm labour processes have been as profound as the transition to Agchem, although qualitatively different. Additionally, high machinery costs have played an important role in spurring centralization and concentration in farming. Doug Faller recounts an important effort by prairie farmers to challenge the impact of machinery dealers and manufacturers on the local market through the formation of Canadian Co-operative Implements Ltd. (CCIL). Faller contends, however, that the impact of CCIL was limited due to the failure of cooperatives of the time to challenge the terms of competition and the paradigm of conventional large-scale agriculture, and to their inability to incorporate sufficient numbers of prairie farmers.

Efforts to change the relationship of machinery to farming have not centred solely on markets or manufacturing, but have also concentrated on how farming practices could be transformed to make agriculture more sustainable—even without a transformation in the structure of farming. One particular area of intervention has been in tillage practices, specifically in the growth of "conservation tillage" as a means of conserving soil and water quality. Alan Hall's investigation into the factors leading to the adoption of conservation tillage shows the importance of multiple social contexts—such as farm production, the community, the extended family, and the household—in the construction of agricultural knowledge. This approach highlights how relations of class, gender and kinship are critical in shaping agricultural knowledge processes and the way decisions are made. Other machinery innovations that may have important impacts for environmental, and perhaps social, sustainability are positioning and automation systems, detailed by Ronald Palmer. Palmer claims that these systems favour small to medium-sized farms. He further asserts that their implementation will result in more efficient farming systems in terms of inputs and outputs, will improve the practice of soil and water management, and will provide healthier environments, as well as food. Farmers, however, have been reluctant to adopt these technologies.

The fate of agriculture and rural life in Western Canada has always been tied to national industry and the global economy. Murray Knuttila argues that in order to understand the current dynamic it is necessary to place prairie farming within the context of the national economy, and then locate them both within the larger structures of global capitalism. Before the present era, agricultural producers represented an important part of Canada's national accumulation strategy, so governments promoted policies and programs to sustain farmers' livelihoods and communities. With industrial capital becoming international, however, the role and importance of particular national producers or markets has become much less important. Thus, global capital and the Canadian state find little to be concerned about in the loss of thousands of Saskatchewan farm families. John Warnock follows this same line of argument in charting the rise of agribusiness in Saskatchewan, and its capture of local and provincial governments and other public institutions. He finds some cause for hope in the rise of opposition to these trends from farmers, consumers, and environmentalists. Roy Atkinson and James McCrorie believe one should not get too optimistic, however, about the potential of farmers to resist capital concentration and the domination of agribusiness. The agrarian middle class has shown itself unwilling or unable to work collectively to provide an alternative to the present system, and owners of large farms—many of whom are alumni of universities where they have been thoroughly schooled in farm business ideology—are abandoning their collective obligations to the wider community.

Ken Jensen makes the case that government programs and policies have played a key role in shaping the structure of agriculture on the Canadian prairies, for good or ill. He contends that well-designed government interventions, therefore, can make an important difference in revitalizing the rural landscape. According to Adrian Paavo, farmers do not have to wait for governments to begin to make changes in their livelihoods. She offers a participatory action research methodology that can be used by farmer groups and others who want to take action on economic, social or political issues. The methodology helps to develop people's ability to recognize, analyze and critique their own environments. Using people's own knowledge and experience as a base, this methodology also helps to give people control over the conditions that they work under and over the processes that affect them on a daily basis.

By bringing together different areas of transformation and disciplines, we hope to offer a comprehensive set of perspectives on the transformation and possibilities of Prairie rural communities in general and on farming in particular. Many of the authors have long been active in the organization of the rural community and are very well know by the rural people of Saskatchewan. Others are academics whose main concern is analysis and critique. Together they offer a reflexive and broad set of perspectives that may help to elucidate the main obstacles and resistances in the way to a better future of rural Saskatchewan

We believe that this wide range of arguments and ideas is clearly relevant to the immediate future of farming and the farming community in the Canadian Prairies. Today, more than ever, we need to understand the profound effects that structural changes, international markets, technology and productive processes have for farmers, their families, and their communities. Having an understanding of these processes and dynamics provide rural people with the necessary information to choose the best possible roads. We understand that many of these roads are difficult and harsh, but at least they offer the satisfaction of meeting the challenges with all the rewards of resistance through collective action.

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SECTION 2

THE IMPORTANCE OF WORK

Mapping the Labour Process Debate

Bob Russell

Skill is not an easy concept to operationalise. That it has historically been associated with such notions as the "secrets and mysteries" of a trade, or to long standing "customs and practices" which are shrouded in the past, should tip us off to some of the ambiguities associated with the term. While a number of the contributions in this volume examine the issue of skill and skill trends in the agricultural sector, this paper takes a step back, by first problematising the notion of skill. I will do this by critically examining three sociological genres which are pertinent to the topic. These three approaches, which are referred to as post-industrial theory, critical labour process theory, and strategic choice theory, are all offshoots of the sociology of work, a sub-discipline within the field. The principal issues of concern for a sociology of work are to be found in describing and explaining societal forms of work organisation, the impacts of such structures on the actors who are implicated in their reproduction and alteration, and in accounting for changes to the patterns of work organisation.

Not all societies delimit the realm of "work" as a specific field of human social life. Indeed, not all societies even have a word to denote "work" as a separate field of activity apart from other life pursuits. In modern industrial societies, whether of the market or state command variety, this is patently not the case. In either situation, large groups of workers are amassed specifically for the purpose of accomplishing given tasks. In return, the performance of work constitutes the main source of income for the bulk of society's members in an industrial context. This not so simple exchange is what sociologists have come to refer to as the *wage-effort bargain* (Baldamus, 1961; Edwards, 1986). The ways in

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1. This is not to say that there are only three paradigms that have informed research in the sociology of work, or that existing bodies of work could not be categorized in a different manner, but merely that the following typology offers a convenient summary of some of the more important literature.

which this bargain is structured, informally renegotiated in daily practices and restructured, is of prime interest to industrial sociology. This refers both to methods of managing the wage-effort bargain, and just as importantly to the accommodation and conflicts which specific forms of organisational management may give rise.

Owing to the fact that work organisation in industrial societies entails accommodations over divergent end goals—for example, the realisation of peak efficiencies versus the creation of humane workplaces which are capable of supplying living wages—the study of work constitutes a prime locus for the analysis of social change. Indeed, I would argue that much of the content of the sociology of work extends over into the study of social change or that the world of work ideally lends itself to the analysis of social change. This is because managerial paradigms and material practices in the work place seldom attain a point of rest for any length of time, given that they are anchored around the uncertainties and constant renewal of wage-effort bargains. The fact that the sociology of work is an ongoing de facto analysis of social change can, however, throw up some vexatious issues. How much change constitutes real, qualitative social change in the social order of work? How do we know when one mode of organising the effort bargain has definitively been replaced by another, not only in theory, but also in practice? What accounts for the popular reception of certain managerial fads? What are the long-term impacts of different modes of organisation on workers' lives? And, of particular importance in these deliberations, what is a reasonable starting point for ascertaining whether skills are being upgraded or eroded?

These are some of the principal questions which have occupied the sociology of work. The remainder of this paper critically examines how different theoretical approaches in industrial sociology have sought to respond to these matters and makes a modest proposal as to what I believe will be fruitful as opposed to not so useful directions for future research. We commence this mapping exercise by considering the first and oldest of three major paradigms that continues to be influential in the sociology of work: post-industrialism.[1]

The Two Waves of Post-Industrial Thought

Post-industrial scenarios for the future of work coincided with the initial adoption of early information technologies as embedded features of new means of production in the 1960s. This technical shift was most visible in work processes that involved continuous flow processes, as in various refining and milling industries. Here, in the context of continuous closed-loop feedback systems of production, it was possible to speak of a first order of automation in which direct human labour was increasingly peripheral. For analysts at the time, however, this meant that living labour could be re-directed to higher-order tasks. Joan Woodward, for example, saw similarities between a new breed of employee, working with automated technologies and the craft workers of pre-mechanised capitalism. Both craft and automated work environments were structured around the activation of small, cohesive work groups and both placed greater emphasis upon the deployment of skilled maintenance workforces than upon the exploitation of unskilled operatives (Woodward, 1965). The automation of production would increasingly do away with the latter groups as manual labour was rendered redundant in favour of the conceptual and cognitive aspects of work effort. This, it was predicted, would lead to the employment of comparatively fewer workers in automated establishments, but also to workers who enjoyed higher levels of remuneration owing to the higher-order, enhanced skill mixes that they would now be expected to exercise. Significantly, Woodward argued that the information technologies which were making continuous process production possible would spread out from the sectors that they were first identified with to become the norm in most industries. More and more labour processes would emulate the continuous flow techniques that were found in only the most advanced sectors of the time. Such developments would also accentuate the importance of managerial labour itself and was conducive to longer lines of command.

Woodward's analysis of continuous flow technologies had definite parallels with Robert Blauner's portrayal of industrial evolution, which was authored at about the same time. According to Blauner industrial societies had moved through three stages of organisational technique: craft production, mass production and continuous process production technologies (Blauner, 1964). Once again, there were definite parallels between the first and third stages. While craft forms of production minimised worker alienation through the amount of control over the organisation of work that was ceded to the producer, automated production facilities opened up new realms of responsibility for workforces. Enhanced levels of responsibility could, Blauner argued, be productive of new meanings and a sense of fulfilment that was missing in the hyperalienated context of mass-production, assembly-line work. Thus, as compared with the factory regimes of mechanised capitalism, the automated labour processes of continuous flow technologies offered opportunities for skill accretion and upgrading. Although the emerging infomated production regime did not exactly replicate earlier craft traditions in so far as "Continuous process technology ... contains tendencies toward greater interest and involvement and toward greater monotony and boredom," it was nonetheless viewed as a significant improvement over the conditions that were presented by mass-production industries (Blauner, 1964: 143).

It remained for Daniel Bell to generalise insights that had been culled from specific industry and technological studies into a societal theory of post-industrialism. For Bell society was being pushed in this direction by macrosociological shifts in the occupational division of labour which saw the proportion of workers employed in the service sector increasing at the expense of workers in manufacturing and primary production (Bell, 1973). With the exponential growth of the service sector, and the expansion of "sociologising" modes of calculation, it was practically a truism that a new class of knowledge workers would follow in the wake. To an ever greater degree, semi-skilled, manual employment would simply be displaced by higher-skilled professional, technical and clerical labour. Undemanding, standardised jobs in industry would be replaced with challenging, holistic opportunities in the service sector and what was left of the industrial sector.

These claims came in for serious criticism by Harry Braverman and other early advocates of a more critical labour process perspective (see below). As a result, less was heard about the advent of a post-industrial society premised upon highly automated technologies and knowledge workers in the decade after Bell's tome on the subject. This changed however, as years of downsizing and industrial restructuring caught hold, diminishing industrial workforces in many societies and as the implications of the new information technologies became more evident. Consequently, it is possible to refer to a "second wave" of post-industrial theorising that seriously got underway a decade after Bell had first predicted the arrival of a post-industrial society (Block, 1990). Despite the fact that this second wave of post-industrial diagnoses had as contributors numerous political economists and critical sociologists, as a genre it shares many of the same features and conclusions as the earlier body of research.

Thus, in fully automated work environments, the basic distinction that the theory of scientific management was premised upon, the rigid division between the conceptualisation and planning of work tasks and their execution, is held to be no longer valid. This is owing to the fact that little in the way of manual or physical labour remains in most modern settings. Instead workers are called upon to develop and use diagnostic skills in detecting and rooting out unwanted variation in production processes (second order errors) that increasingly resemble continuous flow activity (Hirschhorn, 1984). As Hirschhorn elaborates, the worker moves "from being the controlled element ... to operating the controls to controlling the controls (ibid., 73; Adler and Borys, 1989; Block, 1990). While automated information-based technologies can detect and correct first-level errors which accrue from immediate changes in the production environment, more complex, second-order errors that cannot ordinarily be anticipated in advance, require advanced diagnostic skills that consist of theoretical knowledge of production processes, a breadth of vision and a density of perception.

Skill in such highly automated environments becomes the ability to read, interpret and act upon continuous flows of information that are supplied by the technology/means of production itself (Castells, 1996). These have been termed intellective skills and they are the mark, par excellence, of the post-industrial workforce (Zuboff, 1988). Here it is important to recognise that the notion of post-industrial work is not being used in a literal sense. Rather the ability to synthesise information, especially in the form of electronic text and symbols, and to convert it into value-adding responses is increasingly demanded in farm fields, steel mills, financial offices and public services. This calls forth essentially new skill sets according to the post-industrialists, which revolve around advanced problem-solving aptitudes and the ability to flexibly adapt the new technologies to optimum effect.

Such arguments introduce us to some nuanced points. Advanced information technology is pointedly not about restoring craft-like skills. The latter were premised upon sentient, non-discursive, practical forms of consciousness as summed up in such notions as the "tricks of the trade." In traditional craft production, skill referred to the ability of the body to act directly upon the physical world. It entailed a knack, or a feel, that only came with years of direct experience in the performance of manual tasks. Intellective skills, on the other hand, involve aptitudes of relating different forms of information about things to largely unseen production processes. In other words, in the post-industrial work experience, flows of information continually interpolate the relationship between worker and labour process. Skill lies in being able to attach meanings to symbolic texts, that is, to use such texts to come to informed views about what is really going on in the production process, and secondly, to use such information as a productive input (i.e., knowledge) in its own right in order to make positive alterations to production activities.

Thus, automation through the deployment of information technology brings with it new and different skills according to the post-industrial tradition. But, as compared with the previous era of assembly-line, mass-production techniques, "Successive waves of automation can ... be expected to reduce workers' low skill workload, leaving them with a higher overall skill level" (Adler and Borys, 1989: 389). The proof for these claims lies, according to its advocates, in the fact that automation has not entailed any direct cheapening of labour power. Those who work with the new technologies have not experienced wage reductions that have been brought about as a result of technological change. In other words, labour markets have validated both the new skills which information technologies are said to have occasioned and parenthetically the claims of post-industrial theory. On a more modest note, "Although much less than a knowledge revolution, the net result of the shift [in the occupational structure] to services has been to increase the requirements for people to think on the job" (Clement and Myles, 1994: 72).

Efforts at empirically examining the claims of post-industrial approaches fall into two categories: qualitative field observations and survey research. Most of the works cited thus far in both first- and second-wave post-industrialism have been anchored in field work that has been carried out in specific establishments. By and large it makes for some persuasive reading. Indeed anyone who has spent time in a computer-mediated labour process will likely testify to the bewildering banks of computer terminals supplying up-to-the-minute information on different phases of the production process. Still much of this work is quite impressionistic. It provides few insights into required training and familiarisation periods, two critical indicators of actual skill requirements.

Survey research on the skilling effects of the new technologies also indicates that workers who deploy new technologies are more likely to report skill upgrading effects rather than deskilling experiences (Gaullie, 1991; Russell, 1995, 1997, 1999). Indeed, reports of deskilling are relatively rare in work environments that have undergone extensive automation. Here, however, it is important to keep two points in mind. First these are self-reported skill experiences. Secondly, as Rinehart reminds us in his critique of the somewhat different issue of self-reported job satisfaction studies, it is all a question of what benchmarks, or frames of comparative reference, are being employed by respondents (Rinehart, 1978: 7–9). The use of such frames of reference, which often includes aspects of the hegemonic ideology by social actors, must also be part of the sociologist's analysis. Thus if workers are continually told that new technologies will entail skill upgrading and that this will compensate for the traumas associated with the accompanying social change, survey research may capture some of these beliefs, whether they are accurate or not. Simultaneously though, the benchmarks which are used by the social analyst in the study of social change, for example in determining whether changes in skill requirements have in fact taken place, must also be laid bare.

Apart from the methodological issues which are associated with the study of work and skill, post-industrial theory also harbingers some important theoretical points. Most seriously, although the trends that it hypothesises are principally the outcome of technological developments, no theory of technological change or development is advanced as part of the analysis. This lends post-industrial thought a strong element of technological determinism. Technological advance of a specific order is simply assumed and other significant social changes within the sphere of work follow from it. That this is insufficient as a theory of work, however, is tacitly acknowledged by the post-industrialists themselves. Thus it is common to both assert the incompatibility between advanced technologies and the maintenance of a rigid division of labour, as is found in regimes of scientific management, and, at the same time, to issue normative pleas on behalf of more enlightened forms of work organisation. Hirschhorn's behest is typical of such appeals:

> We must design jobs in such a way that workers can effectively control the controls. ... To do so, we must transcend our Taylorist inheritance and develop a new theory and practice of job design (Hirschhorn, 1984: 158).

On the one hand, it is insisted that with the advent of new automated technologies, workers are assuming control of the controls and that older managerial methods such as scientific management have been rendered passé and even counterproductive. On the other hand, post-industrial arguments go on to end with normative invocations to bring about the new order which has confidently been asserted at the outset. In other words, there is a powerful tendency to conflate what *is* with what the post-industrialists believe *ought* to be present in the work environment.

Finally, a tendency to move uncritically between levels of analysis characterises some contributions to post-industrial theory. Here, I am referring to the *technical* division of labour and the *social* division of labour. Post-industrial analysis often treats both, but it is unclear which aspect of the division of labour is driving the changes that are alluded to. The social division of labour refers to the shifting occupational structures in society, specifically the movement of producers out of primary and secondary economic pursuits (agriculture and manufacturing) and into service provision. Sometimes it is argued that this movement is itself occasioning major changes in the way in which work is organised and the consequent skill requirements that accompany it. In these instances, it is the nature of the use-values that are being created which dictates the governing characteristics of the labour force. The technical division of labour, on the other hand, refers to the specific organisation of task performance, the labour process. What counts here is not so much what is being produced, the specific use-values, but rather how they are being produced. We cannot assume, as is often done in post-industrial analysis, that changes in the social division of labour will automatically call forth complementary alterations in the technical division of labour (Clement and Myles, 1994). This would require further demonstration.

To summarise the argument thus far, post-industrial approaches to work organisation and skill trends privilege technological development, but at the same time do not supply an adequate theory of technological change. As a result objective and normative levels of analysis become conflated. Finally, it is unclear whether the principal object of analysis ought to be labour markets and the occupational/social division of labour, or the labour process proper. Critical labour process theories, as we shall preview in the next section, address some of these points, while raising related issues of their own.

Critical Labour Process Theories

The advent of an alternative to industrial sociology can be traced to the publication of Braverman's *Labour and Monopoly Capital* 25 years ago. Prior to this, as we have suggested, reigning orthodoxy had it that industrial automation would reverse the trends of the first half-century. Specifically, scientific management as a method of work study and organisation would be rendered obsolete, as would the ill-effects of deskilling and industrial alienation. Braverman's analysis challenged these claims by inverting the order of causality that is found in much of the post-industrial genre. For Braverman the organisation of work could not be divorced from the objectives of the production process—namely the valorisation of capital through the suppression of production and circulation time. The social relations of production selected and adapted technologies which were appropriate for the objective at hand, rather than the other way around. Managerial authority then, was devised around obtaining maximum work effort and minimising any resistance that might arise in the process.

Practically, soon after production was subordinated to the valorisation of capital, the division of labour within work became an ongoing reality. As Babbage explained, by subdividing work into skilled and unskilled components the capitalist could acquire and pay for only that labour which could be immediately utilised. In other words, the advent of the division of labour permitted economising on labour inputs and the wage bill. This nostrum became the objective of good management. As Braverman observes,

> Babbage's principle eventually becomes the underlying force governing all forms of work in capitalist society no matter in what setting or at what hierarchical level (Braverman, 1974: 81–82).

Giving full play to the Babbage principle also became the chief aim of so-called scientific management as that doctrine was developed by Taylor. In short, Taylor introduced a new level of discursiveness into the organisation of the labour process. In the first instance this was done through subjecting workers to systematic job observation, which allowed for the deconstruction of work tasks into their simplest components. Managerial planning departments could then lay out the most efficient method for doing each task and differential piece rates could be established along the aforementioned "scientific" grounds as the basis for a "legitimate" wage-effort bargain. Organising and extending the division of labour was thereby turned into a conscious managerial function. Job fragmentation and the consequent deskilling of work tasks had to lead to the eventual destruction of the craft worker in Braverman's view. Thus,

> Just as the engineer knows the lubrication requirements, etc., of a motor according to a manufacturer's specification sheet, he tries to know the motions of a given variety of human operator from standard data. In the system as a whole little is left to chance … results are precalculated before the system has been set in motion (Braverman, 1974: 180).

Ominously, the principles of scientific management are compatible with a variety of technologies, including the most automated, which can be adapted to fit the parameters of the paradigm. Taylorism is also applicable in a variety of economic sectors, including different realms of industrial activity, service provision, and public as well as private undertakings. Owing to the appeal of its promise—to provide a simple methodology for resolving the ambiguities of the wage-effort bargain—and the universality of its field of application, Braverman considers scientific management to be *the* discursive practice of modern management. It represents, indeed it is the logic of, capital, made fully conscious of itself. In the end, then, other, post-Taylorist, schools of management were just so much ideological gloss for Braverman.

Others disagree, especially with the importance that Braverman attached to Taylor and the impact which his system had on industrial relations (Nelson, 1980: 124, 137, 140, 149; 1991). Arguing that Braverman cavalierly overlooks alternative systems of labour process control, critics have drawn attention of the existence of contemporary options to scientific management (Littler, 1982, 1990; Edwards, 1979; Friedman, 1977, 1990). One of the reasons attributed to the rejection of scientific management was the resistance (both active and passive), which it is alleged to have generated and which Braverman underemphasised

(Burawoy, 1985). This simply rendered it too dysfunctional as a system of management to adhere to in many workplaces over the long run (Trist, 1963). As a result, a plethora of other strategies for ordering the wage-effort bargain have been enumerated in the post-Braverman, labour process tradition (Russell, 1995). These may have mitigated some of the tendencies such as the deskilling of labour that Braverman viewed as synonymous with modern capitalism.

The criticisms directed towards *Labour and Monopoly Capital* may be summarised as follows. First, Braverman devotes the bulk of his energy to examining Taylorism as a theoretical system. In other words, the importance of scientific management is accepted at face value without further empirical investigation. Consequently, the reception that Taylor's system garnered, both from owners of capital and from those who were directly subjected to it, remains unrecorded. Owing to this fact, other alternatives for overseeing the labour process are discounted. Such alternatives, which some view as being just as important, if not more so, include the use of "responsible autonomy" (Friedman, 1977, 1990; Trist, 1963), technical and bureaucratic control (Edwards, 1979), and various contemporary strategies that reverse the fragmenting logic of Taylorism, the most influential of which are discussed in the next section.

Critiques of Braverman that emerged from a critical labour process perspective are not without contentious points in their own right. For the purposes of this review I would draw attention to three shortcomings that are found in the post-Braverman analyses cited in the preceding paragraphs. First of all, there is an assumption that other forms of managerial control are incompatible with scientific management. If that is so, either scientific management is adopted or an alternative is found. This is not necessarily the case, however. For example, it has been shown that bureaucratic control, which is best epitomised in the complex systems of job progression, hierarchy, and firm specific labour markets, is not only compatible with scientific management, but represent labour's accommodation to it in the form of job control unionism (Jacoby, 1985; Katz, 1985; Rankin, 1990). In other words, Taylorism has proven to be highly suited to processes of bureaucratisation. To assume that other managerial strategies are simply incompatible with scientific management is to fall into the same type of essentialism that critics have charged Braverman with.

Related to this first point is the problem of accounting for the origins of other forms of work organisation. Did they emerge as conscious alternatives to the shortcomings of Taylorism, or independently—this is not always clear. Other strategies for organising the wage-effort bargain are sometimes thought to have come about through the medium of labour militancy. That is, strong labour movements are able to veto the program of scientific management, in which case alternative strategies for managing the labour process such as responsible autonomy are called into play (Friedman, 1977). Yet this may not always be the case. Strong labour movements may be able to make the most out of a system of scientific management and adapt it to ends which were not originally foreseen. Weak labour

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2. The first job-evaluation schemes were devised after the Second World War as a way of creating what were seen to be fair comparative wage rates in given employments. The Cooperative Wage Study program was one such scheme that was developed by and adopted at the behest of the United Steel Workers, a good example of unions using bureaucratic processes as a power resource (Bean 1964; Jacoby 1985; Storey 1994). Today job study, and the methodology associated with it, is also part of the attempt to introduce pay equity into the workplace (Cuneo 1990).

movements may be subjected to new paradigms such as Quality of Working Life schemes (Wells, 1987), Total Quality Management, or Continuous Improvement (Russell, 1999). So on top of the problem of demonstrating that alternate managerial strategies really are alternatives to scientific management, there is the challenge of accounting for their origins. To date, numerous questions still remain outstanding in this regard.

Finally, and for the most part, critics of Braverman have remained silent on the issue of skill trends and thereby avoided a central part of his thesis. As we have seen, Braverman argued in the strongest possible terms that deskilling was the operating tendency in capitalist labour processes. We cannot simply assume that a rejection of the principles of scientific management in favour of other control strategies, or a melding of Taylorism with other approaches, will have skill neutral effects. Instead, this issue requires further investigation. As mentioned previously, the issue of skill and changes in skill content is, in part, a question of bench marking. For Braverman the most meaningful comparative group with which to analyse contemporary workers are nineteenth-century craft workers. The advantage in this selection is that it offers a significant historical dimension to the study of skill change. We are thereby encouraged to plot long-term shifts in work-skill patterns. At the same time though, these bench marks may not be the most relevant ones when examining questions of working-class consciousness or capacities for mobilisation. The reference point for workers is far more likely to be the nature of their jobs in the recent past and how they have changed, rather than the work experience of parents or grandparents which may be devoid of meaning. This would account for the different optics on skill change which are advanced in Braverman's analysis on the one hand, and the results which frequently show up in survey research on this topic. In short, different bench marks and time horizons produce differing diagnostics of skill change. Is it possible to argue more cogently on behalf of one frame of reference or another?

Braverman's use of skilled craft-workers as a reference point for the study of skill change, as already mentioned, introduces a long-term, objective dimension to his analysis. Indeed, quite early in his study, he distinguishes between the objective and subjective dimensions of work, while announcing that his concern lies principally with the former. In this vein, then, skill is treated as an objective attribute of work organisation. Jobs, depending on how they are structured, will require more or less skill. This dichotomisation between the objective and subjective dimensions of work, however, is somewhat contrived. It fails to recognise the social dimensions of skill construction and their impacts upon the experience of work for workers. By drawing a strict dichotomy between the objective and subjective dimensions of work, and privileging the former, Braverman is forced to relegate worker's experiences, their reflections upon those experiences and their reactions to them to the margins of his inquiry. Additionally, there is no recognition that skill itself is a socially constructed and validated attribute, that is, it is highly subjective in some senses (Jenson, 1989).

Take the research of James Bright, for example, upon which Braverman bases many of his conclusions pertaining to skill (Bright, 1958). Bright produces a composite index for measuring skill demands, of the type which are used in job-evaluation studies for the purpose of arriving at fair wage rates.[2] Bright's index includes such components as estimates for the amounts of mental effort expended in a job, the exercise of "general skills," by which he means "understanding and ability," and the presence or absence of unpleasant environmental conditions. While Bright acknowledges that many of the factors which enter into the construction of his index possess subjective evaluations, Braverman disregards this and simply treats skill as an objective quality which is attached to the job position. Indeed, even for the so-called objective measures that enter into our notion of skill there are considerable degrees of discretion. For many positions, setting a *specific*, minimal level of education is often arbitrary, as Braverman recognises elsewhere in his analysis. Similarly the connection between training and familiarisation times and job requirements, in the form of apprenticeships, was also often governed more by "custom and practice" than by a hard correlation. In short, as I have argued elsewhere, a more adequate image of skill would view it as a multifaceted, evaluative notion, at once "an objective attribute, a social construction and a political resource for those who can stake out claims that are perceived as legitimate to its possession" (Russell, 1999: 132). In this sense, skill refers to certain objective qualities which are required to perform a given task, including prior forms of knowledge, and specific abilities which are often acquired through training and experience. Simultaneously though, such attributes must be socially validated as recognisable and worthwhile skills. Both the possessor of the "skill" and the public play a part in producing, or not producing, such a definition. Finally, if a job/occupation attains recognition as a skilled pursuit, this in turn becomes an important political resource which can be used to influence future developments in the particular employment. Jobs which are no longer as "skilled" as they once were, for example, may still be validated as requiring high skill-levels.

For all of these reasons then, measuring skill and determining trends in skill requirements becomes a much more complex task than originally foreseen. As Bright suggested, deskilling may occur at different levels of mechanisation and on different pieces of equipment. But such trends may also be partially offset by other dynamics in the workplace that we will preview below. Indeed, many of the conclusions which are drawn on the subject are dependent upon the starting point that is selected to measure the amount and direction of change. In the next section, after reviewing strategic choice perspectives and their manifestation in post-Fordist theory, I will argue that the critical labour process approach may have a more interesting and useful contribution to make than that which is portended in the debate over skill trends. In any case, given the methodological issues enumerated above, it is unlikely that a definitive resolution to the deskilling debate can be provided.

Strategic Choice Perspectives and Post-Fordist Theory

What I have termed strategic choice perspectives on workplace organisation commence with the recognition that alternative paradigms are available for structuring the work-effort bargain. Thus, the form of organisation which is adopted is not uniquely determined by either the operating technologies as in post-industrial theory, or by an essential logic of valorisation as in Braverman's analysis. Rather, organisational formats are a matter of strategic choice, the outcome of patterns of interaction between labour and capital in the workplace. This introduces elements of both conflict and contingency into the analysis.

Various alternatives to scientific management and its counterparts—bureaucratic control, job control and technical control have been enumerated. Emerging from British experience is the notion of responsible autonomy (Trist, 1963; Friedman, 1977, 1990). As suggested by the label, considerable amounts of self-determination are turned over to work groups as to how best to organise the labour process. In this paradigm skill is something to be utilised in the wage-effort bargain, not a quality to be abolished. Systems of responsible autonomy, according to the theory, are more likely to be associated with strong groups of core workers, who have successfully resisted the travails of Taylorism. There is thus a direct connection between levels of worker militancy and systems of control in the account of responsible autonomy. Work forces illustrate a bi-polar division into core and peripheral components. The former work under conditions characterised by responsible autonomy, while the latter carry out work tasks under systems of direct control (i.e., Taylorism). The management system is an outcome of the type of relationship that exists between local units of capital in the labour process and the labour forces that are employed therein.

As in the case of the strong claims that have been made about scientific management, these formulations do not seem to fit all scenarios either. Indeed, just as Braverman's analysis of Taylorism has a definite American focus to it, theories of responsible autonomy would seem to have a particular European bent to them. In particular, the analysis of responsible autonomy does not adequately distinguish between labour-management practices which have grown out of traditions of worker militancy and similar systems which are introduced at the behest of management in the context of weakened labour movements. Here, one can cite the introduction of programs based on quality circles, team work and flattened job hierarchies in the latter 1970s and 1980s in North America. These initiatives seemed to bear many of the same features that are alluded to in the theory of responsible autonomy. Yet they were introduced by corporate managements seemingly to press the advantage against a much weakened trade union movement. Situations such as this have not been adequately dealt with by those authors who have explored the responsible autonomy alternative.

Another strategic alternative that has received considerable attention falls under the heading of flexible specialisation. This term was coined on the basis of new patterns of work organisation which emerged in areas of Europe, with Northern Italy being the paradigmatic case, following the worker insurgencies of the late 1960s. Through the use of sub-contracting, the formation of production networks and alliances between firms, and computer-aided manufacturing systems, the economies of mass production can be brought to specialised, small batch-production units. At one and the same stroke producers are able to realise both the economies of scale associated with mass production systems and the economies of scope which Fordist systems were ill-designed to deliver. This does imply, however, a radical decentralising of the Fordist order through such practices as enterprise bargaining and the creation of community-based forms of regulation, which fill the void that was formerly occupied by Keynesian macroeconomic management. For some this does imply the creation of new forms of craft, like labour. Especially with the adoption of computer aided manufacturing in such technologies as numeric control programming,

> ... the user can adopt it [the technology] to his or her own purposes and habits of thought. The computer is thus a machine that meets Marx's definition of an artisan's tool: ... The advent of the computer restores human control over the production process; machinery again is subordinated to the operator (Piore and Sabel, 1984:261).

The notion of flexible specialisation, unlike the post-industrial approaches previously discussed, attempts to integrate the social and the technological. Thus, rather than issuing normative pleas on behalf of changing work practices, flexible specialisation theory examines how the social organisation of work has already been altered, in part through the crisis of the old regime (Fordism) and in part through the possibilities that the new information technologies open up. Even more influential than the discussion of European variants of flexibility though, have been the analyses of Japanese systems of work management and their contribution to attaining flexibility in the organisation of work.

Falling under various rubrics—Japanese production relations, lean production, Total Quality Management and others—what is most significant about such analyses is not the role played by new technologies, but rather the importance of social re-design in the work-effort bargain. Indeed, the heartland of such managerial innovation is seen to lie in traditional industries, such as automobile assembly, where new technologies have taken second place to work re-engineering in providing what proponents view as nothing less than a complete revision of the Taylorist division of labour. According to this view, the work place is transformed into a laboratory of innovation, where mental and manual labour are reintegrated through the organisation of problem-solving work teams dedicated to the continuous improvement (kaizen) of production systems. The project of continuous improvement, which is embedded in the organisational culture of the firm, represents a harnessing of worker's intelligence and knowledge, and thus a radical alternative to the tenets of scientific management, which sought to divest workers of these aptitudes. Thus according to two advocates,

> In the factory as laboratory, the distinction between intellectual and physical labor that Marx indicated and Harry Braverman raised to the fundamental contradiction of modern capitalism is at some fundamental level mitigated (Kenney and Florida, 1993: 68).

As essential components of problem-solving work teams that are guided by the principles of kaizen, post-Fordist workers are said to require new sets of abstract reasoning skills. According to Kenney and Florida, if anything, such workers approximate in skill level the electrical engineers of yesteryear. Accordingly they must be managed in a fashion more befitting researchers than factory workers (Kenney and Florida, 1993: 68, 304). This also implies new levels of training and multi-skilling. For workers who can now "perform a number of tasks on different machines simultaneously ... [m]ulti-skilling is absolutely essential for this strategy to be successful" (ibid., 38).

Lean production thus makes more of its workforces and correspondingly expects to get more out of them. It is said to combine the best features of both craft production systems and mass production, while eliminating the high costs associated with craft and the rigidities of mass production. Through the adoption of the principles of team work, continuous improvement, and bufferless, just-in-time inventory systems, lean production is both more efficient and more challenging for the workers who are employed in firms that have adopted this approach to managing the labour process (Womach et al., 1990). Owing to this, the system of lean production can be and inevitably, will be, applied "equally in every industry across the globe..." (ibid., 7).

While there is undoubted hyperbole in some of the celebrations of the new Japanese-inspired production systems, there is little doubt that work reorganisation around the principles of lean production is having a potent impact around the world (Rinehart et al., 1997; Elger and Smith, 1994). Lean production may now certainly be considered an important managerial paradigm, a strategic option that may be considered for adoption. The question then is to what extent are the analyses that portray lean production as a superior alternative to scientific management accurate? Can a production system be more efficient by engaging workers in a more humane work order and do systems such as lean production, which place an emphasis on flexibility, accomplish this?

It is in addressing this important issue that labour process theory can make its most positive methodological and theoretical contribution. In the process, critical analysis of contemporary production systems will also serve to refocus labour process theory in a more useful direction. Generally, what labour process theory has flagged with respect to the new forms of work organisation is the overall *intensification* of the work effort that they entail. In other words, what lean production, flexible production or other strategic options share with scientific management is the end goal of shifting the wage-effort bargain in a fashion that is highly favourable to the owners of capital. This has been portrayed in different, but compatible, ways. Thus, for Dohse, what is termed "Toyotism" is principally Fordism minus the checks upon managerial control that have been afforded by job-control unionism (Dohse et al., 1985). In other words, lean production is a form of hyper-Fordism. Price concurs with this in his extensive study of Japanese production relations. In his analysis, the enterprise unionism of Japanese industrial relations has made a form of "intensified Fordism" a reality (Price, 1994). In another valuable study, Berggren refutes the "TINA" ("there is no alternative") principle which Womack et al. have asserted with respect to lean production systems. First Berggren demonstrates that in practice lean production represents no fundamental break with the mainstays of Taylorism. Jobs are designed by industrial engineers, not the workers who staff them, while job cycles and training periods remain exceedingly short (*see* Fucini and Fucini, 1990). If anything, Taylorism is extended through the posting of wider job areas and broader parcels of responsibility, which function mainly to intensify the labour process. Secondly, Berggren demonstrates that alternative forms of organisation are feasible in his comparison of Toyota and Volvo (Berggren, 1992).

Another study of an auto assembly plant in another jurisdiction by Rinehart, Huxley and Robertson extends these conclusions further. Based this time on a longitudinal panel analysis, the authors demonstrate how work intensification is wrapped into the culture of continually kaizening every process (Rinehart et al., 1997). Underlying the marginal improvements that are part of kaizen, however, is a standardization of work activity that would do Taylor proud. In other words, for these authors, new systems that employ Japanese-style production relations are built upon the foundational elements of work organisation that Taylor made explicit. Also common to both scientific management and its successor paradigm is the attempt to design stressors into the labour process as a way of goading workers on. For Taylor this assumed the form of the differential piece rate and the individuation of earnings. In modern day lean production facilities, the use of inventory-less plants that include minimalist staffing and just-in-time production is intended to accomplish the same ends. For this design, Parker and Slaughter have coined the apt term "management by stress," which captures the essential point (Parker and Slaughter, 1988).

Notably most of this second wave of critical labour process theory has focused on a single industry—auto manufacturing—where the transition from Fordist principles of organisation to post-Fordist is particularly apparent. Apart from auto manufacturing though, much remains to be done. As a start, Corman et al. in their examination of steel production at Stelco Canada conclude that the industry has been subjected to a process of re-Taylorization in the restructuring of the last two decades (Corman et al., 1993). By this the authors are referring to a generalised intensification of labour in the industry through job amalgamation. In recent work, I also try to summarise the dynamics of industrial re-engineering, this time in the mining industry, through exploring the theme of obtaining "more with less," although I am willing to hypothesise that a similar dynamic is at work elsewhere in both the private and public sectors.

A central aspect of the "more with less" dynamic is the paring down of workforces. But this has been accomplished in the first instance through processes of work redesign. Fewer workers are now responsible for larger work areas, and more tasks (Russell, 1999: ch.5). Thus technological change is not the sole factor behind employment reduction. Rather tech change and productivity enhancement have gone, hand in hand, with a form of work organisation that witnesses fewer employees performing more functions. To this extent, the new production relations do depart from the strictures of Taylorism. Instead of further job fragmentation, a defining feature of the new paradigm is job combination and job expansion. The "more with less" scenario seems to be at work throughout contemporary economies, in both private and public sectors.

Does this then imply an end to the deskilling tendencies that Braverman depicted as the main trend? As suggested previously, this boils down to a question of benchmarks and which ones are the most appropriate. Contrary to those who advocate on behalf of the benefits of flexible production, or leanness, the emergence of new forms of craft labour that is occasioned by such paradigms is more a pious, if misplaced, hope than reality. As Womach et al. candidly advise and despite suggestions elsewhere in their work to the contrary,

> Our advice to any company practising "craftsmanship" ... is simple and emphatic: Stamp it out. Institute lean production as quickly as possible and eliminate the need for all craftsmanship at the source. Otherwise lean competitors will overwhelm you... (Womach et al., 1990).

Accordingly, a return to craft-like working conditions is improbable for all but a few. At the same time though, workers' jobs are changing under the new managerial paradigms and it would be foolish to deny that anything other than cosmetic appearances have been altered. Workers themselves consider that the requirement to "do more with less" does entail job upgrading as compared with their previous situations. While few workers in the studies that I have conducted are under any illusion that they have been upgraded to the level of "super technicians," (Kenney and Florida's depiction), or that they have entered a new era of "techno-craftship," for those who have witnessed substantial organisational change, there is a sense that being able to perform more tasks with fewer co-workers does leave an impact upon work expectations. Thus, to the degree that some skill upgrading has occurred, it is principally associated with job expansion—in other words enhanced work expectations. This is what contemporary labour process theory draws our attention towards. The intensification of work rather than the *deskilling* of workers is the principle feature in a world of downsized and re-engineered labour processes.

Up until now, debates that concern the implications of changing labour processes have, for the most part, been restricted to relatively few economic sectors. While this has focused attention and allowed for especially poignant comparisons of the similarities and differences in managerial paradigms, it is also a shortcoming. Although it is understandable that industries which have lent their names to whole systems of production, as is the case with auto manufacturing, should constitute one locus of investigation it is important not to restrict our investigations to one industrial sector alone. It is to be hoped that the foregoing remarks provide some useful markers for the as yet little explored domain of contemporary agricultural labour.

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Degradation of Farm Work in the Canadian Prairies

Harry P. Diaz and Robert Stirling

Do farmers have more skill than they used to? Answers to this question are often confusing. In a visit to an experimental farm, we observed an example of this confusion. "Farmers," a local agronomist explained, "do have more skill today," but ten minutes later, he complained about how farmers had to phone him for help in determining simple chemical application rates when they could read the same information in a booklet distributed by the Department of Agriculture. We will argue that this confusion springs from the tension between a view of technological development as progress and farmers as technological literates, and the stubborn reality that keeps insisting that the manipulation of technology does not always mean a mastering of nature.

A clear and precise answer to the question is essential in order to define the direction of both political and scientific work able to present alternatives to the current distorted agricultural development. But the response is rather difficult. It requires a definition of the meaning of "skill." It also requires discovery of the nature of the complex relationship between technology and farm labour, a grey area that requires exploration not only of the markets, but also of the institutional networks that tie together farmers, rural communities, agribusiness, academic organisations and the myriad of state institutions that deal with agricultural and rural issues.

Different answers mean different strategies for agricultural development. If the answer is that farmers do have more skills, then the strategy is simple and points more to a change of form rather than content. We do not need to transform the technological and institutional contexts in which farm families produce and live, because there is nothing wrong with them. Rather, our efforts should be directed to ensure that farmers maintain their farms and improve their situation vis-à-vis the markets and the state. But the opposite answer implies a totally different strategy, where content and form must both be altered.

A transformation of the rationalities that define the technological patterns in use in modern agriculture is required.

The purpose of this paper is to define a conceptual and theoretical framework for a discussion about this issue. In the coming pages we have tried to accomplish a few goals: first, to define "skills" by emphasising two aspects that are central to any productive process, knowledge and control; second, to define the conditions in which the relationships between technology and farm labour are situated; and third, to clarify areas of inquiry for an empirical study with regard to this issue.

We begin with a perspective that has been heavily influenced by Braverman's original work on monopoly capital and labour (1974). So we have framed our research question in the context of the conditions of labour in modern capitalism and the expectations for the future. The nature of farm labour, however, has forced us to follow paths of thought that are rather different from the ones selected by Braverman.

The Meaning of "Skills"

How to define skill? It is clearly a labour capacity. But it is not a labour capacity that is easily obtained through an educational program that culminates in a certificate or a degree, nor an ability that is grasped simply by a process of observation. Rather, it is the product of unique human experience, which gives to its owner the ability to know and control the process of labour. A famous passage from Marx illustrates the meaning well:

> We pre-suppose labour as a process that stamps it as exclusively human. A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labour-process, we get a result that already existed in the imagination of the labourer at its commencement (1967, p. 178).

Labour is not only one of the most central human activities, but also the one which is the basis for the human condition. In this sense, labour means creation, the basis for the realisation of any human being. Labour implies an interaction between the labourer and nature, an interaction characterised not only by the transformation of nature, but also by the transformation of the labourer through creation. To this end, labour means development and change for both workers and for nature.

In order to grasp the significance of labour we must understand that its potential resides in the combination of knowledge and control. The labour process, in order to be fruitful from the perspective of human creativity and development, must be understood by the worker and amenable to his/her will. The opposite leads only to a tedious routine where labour loses not only its attraction but also its ability to transform reality. To this end, knowledge means the capacity to understand the multiple dimensions that characterise any labour process—to grasp the variety of mechanisms that, as a chain, transform the labour process into a single, coherent activity, as well as the internal functioning of each one of these mechanisms. Control, on the other hand, means the capacity to act upon those mechanisms—the ability to deconstruct and reconstruct those mechanisms at the subject's will.

In simpler terms, knowledge implies thought and control refers to praxis. But in this case we do not assume a simple dualism between both aspects. Rather, they are directly interrelated, intertwined in a process where knowledge becomes a full activity only when it expresses itself in praxis and, on the other hand, praxis acquires meaning when it corresponds to certain forms of thought. Control, accordingly, implies the previous existence of knowledge. In order to act upon a certain phenomenon, knowledge is required of its basic components and how they function. And knowledge, in order to have meaning, must be applied to reality through the process of control. Any separation of these two dimensions, knowledge without control or control without knowledge, implies a degradation of labour that inhibits the workers' capacities for development and change.

The meaning that we are providing for control is rather different from "control of the means of production" or "possession" (for example, Wright, 1978). In this last case the term is equated with a capacity to define how things are produced, a capacity that emerges from economic ownership. The capitalist has the power of deciding—a right provided by economic ownership—how and when to use the means of production, a power that could be a direct one or it could be mediated by a hierarchy of managers. In either case, this conception of control does not necessarily mean the ability to break the productive process into its simplest components, act upon them, and reconstitute and/or transform the whole mechanism. Indeed a capitalist or manager could "possess" the productive process, and still be totally ignorant about the components of the process and their interrelationships. Control, as we define it, is attained in the modern corporation mainly through a technical division of labour, where a group of technicians and scientists fulfils the function of control under management direction. This clarification is needed because of the unique nature of modern farming. Farms and their means of production are owned and possessed by farmers, in the traditional Marxist sense. They can define what to produce, what to do with the surplus, how to operate their machinery, and, of course, to quit farming if they want or must. But in the case of modern farmers there tends to be a distance between their economic ownership and possession and their level of knowledge and control of the productive process.

How can this distance be explained? First we need to emphasise another important dimension: knowledge and control are not particular phenomena that are relevant only to a particular farm or particular farmers. They are social, in the sense that the productive process—the object of knowledge and control—is a social product that takes place in more or less similar terms on all the productive units. Hence, the capacity of a farmer to attain a certain level of knowledge and control is dependent upon how these two aspects are distributed in society.

The social character of production is an idea present in the work of various social thinkers. In order to transform nature, people must co-operate with each other, an idea that is behind Marx's notion of "relations of production." Traditionally, co-operation has been analysed in terms of the existence of relations of production that are characterised by exploitation and domination. Co-operation, in this case, is "distorted" by the context of private appropriation of the means of production and of the surplus. We will argue later that this distorted co-operation affects the farmer's capacity to establish a solid knowledge and control of the productive process.

However, this claim of distorted co-operation should not deter us from seeing other forms of co-operation that are more in line with mutual support and solidarity. Co-operatives and self-management enterprises are good examples of these more "rightful" forms of co-operation. In our perspective the rural community is seen as a social setting where this form of co-operation tends to prevail. Let us make clear from the beginning that our emphasis on the farm community as an expression of mutual co-operation does not mean an idealist view of this human setting. Rural communities are characterised by tensions, conflicts and processes of differentiation. But at the same time, they include networks of human relationships that take place in the context of everyday life, where there is a continuous exchange of information and ideas that emanate from particular experiences related to farm production and other processes. The existence of this exchange is important for the development of knowledge and control at the level of the individual farm. It allows for the spread of meanings and understanding among local farm people that contributes, in the long run, to the existence of a social body of knowledge and control of the farm productive process that is, of course, not always uniformly distributed throughout the community.

Moreover, the existence of a community permits a better grasp of the complexities of the productive process, especially in those cases where the process acquires a complexity that would severely tax the capacity to understand, and the resources, of a single individual. A certain degree of specialisation and complementarity among the members of the community probably enhances innovation and the growth of certain complex forms of knowledge and control. The existence of these aspects—specialisation and complementarity—is not restricted to the community. Other organisations also have the potential for developing this form of co-operation, such as farmers' unions, wheat pools, agricultural societies, commodity groups, farm fairs, and other farm organisations.

It is also necessary to indicate that there are obviously some limitations to the farmers' capacity to know and control the whole productive process. The level of development and sedimentation of the social division of labour means that farmers will always be dependent on products that must be produced beyond the farm gate. For example, farmers cannot produce steel or rubber, fundamental raw materials for the construction of modern machinery. Nevertheless, they have the potential for knowing and controlling a significant portion of the components of the productive process.

Thus, two forms of co-operation—based on two distinct rationalities—seem to affect the level of knowledge and control of the farm people upon the farm's productive process. The first is a distorted co-operation that springs from relations of domination and exploitation and which connects the farmer to a variety of social agents that exist beyond the local community, groups that subordinate farm people through unequal exchange. This form of "co-operation" is based on the "rationality of the market," a rationality that emphasises profits as the goal of the productive process and economic exchange. Its main agent is the capitalist enterprise, which is in the constant process of increasing profits in order to increment capital.

The second form of co-operation is one that takes place largely at the level of the community and farm organisations, a form that emphasises a higher degree of complementarity and mutual support as a means to reach objectives. Its rationality is the "rationality of reproduction," where the main goal is to ensure some socially defined living standards for the household, a rationality that has already been recognised by Chayanov (1966) and others (Goodman and Redclift, 1981).

The Institutional Context

The Complexity of Modern Farming

In order to analyse how these forms of co-operation affect farm people's levels of knowledge it is necessary to consider the productive process. Knowledge and control are related to the level of complexity of this process. The productive process in a modern farm has a complexity different than the one existing in a peasant holding that produces only for self-consumption. Production for the modern market usually demands the use of a larger number of inputs, as well as a good grasp of the complicated dimensions of the output markets. To this extent modern farmers must continuously expand and develop their knowledge and control of the different segments of the labour process. Moreover, the labour process in the modern farm has become an accumulation of many distinct, interrelated activities, each contributing to plant or livestock production, but often in ways that would not be immediately obvious from the perspective of the peasant producer. For both, it is necessary to carry out cultural practices, repair machinery, maintain buildings, do accounting, maintain information about markets, and so forth. But for the modern farm, each of these areas contains minute detail work typically very similar to detail work in the non-farm sectors.

Canadian farmers are strongly integrated to markets. In order to ensure a minimum income for the reproduction of the family and the farm, farm people must produce for the national and international markets. Moreover, given the peculiar characteristics of these markets—the dynamics of the cost-price squeeze, private oligopoly control, state intervention, and so forth—farms have specialised in the production of a restricted number of crops in order to ensure a level of productivity that will produce the necessary income. This specialisation typically involves the substitution of technology for labour in order to increase farm productivity.

This increasing level of specialisation effects farm families in varying ways. One potential effect is a reduced level of self-sufficiency, to the extent that most of the energies and resources are directed to the production of an increasing amount of a limited number of commodities. As part of this process there tends to be a disappearance of farm gardens and of small-scale livestock and poultry production. A second potential effect is an increasing integration with input and output markets. The increase in productivity is typically carried out by introducing more and more technology to the productive process, so farms must acquire fuel, fertilisers, pesticides, seeds, machinery, repair services, loans, etc., all products that are designed and produced beyond the farm gate. Also, in order to commercialise, farm people must develop a good understanding of markets and their technical dimensions. For example, it is not enough for the modern farm family to simply produce "wheat" for the market; it is also necessary to know the details of grades and grading, types, moisture and protein contents, and the complex relationship of these characteristics demanded by "the market" to their earlier cultural (or growing) practices on the farm.

A Working Hypothesis

What are the consequences of this process of "technological dependency" upon the farm productive process? Our answer to this question is expressed as an hypothesis. We propose that the consequence of this increasing specialisation and integration with the markets has caused a loss of knowledge and control by farm people of the different components of the productive process and, as a consequence, a degradation of farm work. Increasing levels of technology in inputs or outputs lead to a decreasing capacity by farm people and their communities to know and control. A typical example—the larger and more sophisticated combines are, the less able are farmers to know their internal functioning (or to be able to repair them) and, consequently, to control them.

Obviously, this loss of knowledge and control depends on several dimensions. One is the level of complexity of the specific component of the productive process. We should remember that in opposition to some sophisticated machinery, e.g., modern combines, there are also technological items that are commonly repaired and sometimes even created by farmers. There are numerous examples of farm inventiveness. Indeed much of the machinery of modern prairie farming was first created by farmers although the proprietary complexity of the new machinery may bear little resemblance to the "public domain" nature of the early prototypes (for examples see Hislop, 1988a, 1988b; Isern, 1987, 1988; and the article of Faller in this volume). The examples may be much less common for farm chemicals and inorganic fertilisers, which were largely introduced by industrial and mining corporations searching for markets after World War II. The history of crop and livestock breeding, and of farm consumer and marketing co-operatives, suggests an inventive presence by farmers in these areas, again increasingly being usurped by non-farm interests.

A second dimension is the level and type of skills existing in the local community or on the farm, which are not homogeneous in the Canadian countryside. In this case we do not refer to educational levels but rather to the capacity to act upon the new technology (an agricultural degree does not always afford its owner control of a process).

A third dimension is the type of production that exists on the farm or in the local community. Raising different types of crops or animals obviously requires different levels and types of technologies, some of which can be subjected to the knowledge and control existing in the local context.

Specialisation has not only led to the farm family's increasing incapacity to deal with the new technology that they are forced to integrate into their productive process. It seems that it also has displaced previous knowledge to the extent that new specialised technologies have replaced old ones. For example, increasing specialisation appears to have led to the gradual disappearance of traditional horticultural practices implemented during earlier periods of prairie agriculture in order to ensure a modicum of self-sufficiency and stability in farm households. This horticultural knowledge was developed based on an intensive practical farm and professional experience that lent itself to the process of colonisation of the Canadian prairies. Today, with the increasing demand for land and the availability of fruits and vegetables in local supermarkets, that general knowledge is either being eroded or else changed into a detail knowledge of marginal specialities.

Corporations and Technological Dependence

The increasing presence and menace of this technology is directly related to the continuous oligopolistic control that large corporations have of agricultural markets. The increasing use of this technology is directly related to the national and international strength of those corporations. To the extent that these corporations are the main producers of this technology, they compete with each other in order to ensure a larger control of the market, control that will allow them to integrate that technology into the everyday activities of the farm productive process (see the discussion on agricultural chemicals presented in the article of Argue et al. in this volume). The rationality behind these actions is obviously to secure and increase profits. To the extent that farmers operate in oligopolistic markets and integrate the technology that prevails in those markets into their production, they become habituated to its use. They routinize the use of the technology, integrating themselves into the circuits of those corporations. The farmers' integration means a dependence on the corporation that controls the market for inputs and outputs (such as parts, feed, chemicals, services), and knowledge, a dependence that is continuously reinforced by the corporation through increasing the complexity of the technology sold to farmers. Obviously, the more integrated is the farmer with the corporations' circuits, the larger and more secure are the potential profits for these companies. Such farmers may have no serious alternatives to these technologies and, once purchased, they often must continue to pay the corporations during their use, repair and maintenance.

But these problems have a complexity that goes beyond the simple relationships between corporations and farmers or the functioning of markets. There are also other institutional actors involved in this process, actors who through their own actions and rationalities contribute to the subordination of farmers to the corporations' rationality of the market. Two of those actors require our attention: science and the state.

Science and Technological Dependence

Farmers' dependence feeds on one of the myths of modern society: the separation between common knowledge and scientific knowledge. Western societies have had a fascination with science and technology, thus enhancing their power. It is widely assumed that science has the key for resolving all of humankind's problems, as long as everyone is eager to follow the recommendations proposed by the scientists. One of the pillars of this myth is the argument that there is a clear and demarcated difference between common—or folk—knowledge and its scientific counterpart. Scientific knowledge is presented as the only valid, the only true, objective, and neutral understanding of reality, while common knowledge is viewed as a limited comprehension of that reality, full of wrong assumptions and distorted ideas. The consequence of this differentiation is a bifurcation of human knowledge, where the predominance of scientific knowledge as the only viable means to understand and act upon reality becomes legitimated.

The limitations of this bifurcation of knowledge—which does not allow for a legitimate exchange of ideas between scientists and people—are reinforced by the context in which modern science operates. As we know, scientific knowledge is not something that is uniformly distributed in society or something that springs from a vacuum. It has its own institutionality, constituted by universities and private and public research organisations, and its own agents, scientists and administrators who organise the general functioning of these institutions. This institutionality and the agents who operate in it define the direction of the scientific effort, but their definitions are contextualized in both the bifurcation of knowledge, and a "rationality of administration." This rationality lies in the acceptance of procedures and rules that subordinate the creative process to bureaucratic demands. Here the goals are not an understanding of reality but loyalty to norms and regulations. A good example of the predominance of this rationality in the institutionality of science is the funding of research, where the administrative and academic criteria of the funding agencies force research into a relatively narrow path of development. The acceptance of this rationality by scientists has been facilitated by the lack of internal flexibility of the predominant epistemology, positivism, a lack of flexibility that limits the capacity of this institutionality to accept other epistemologies as scientifically valid.

So, the institutionality of science, based on a mythical bifurcation of knowledge, is characterised by a biased epistemology and an administrative rationality. This alliance is not always easy and free of conflict, but the rationality of administration seems to be becoming increasingly dominant. However, in certain scientific institutions, such as universities, the existence of prerogatives such as academic freedom means the practical impossibility for a full complementarity and domination to the extent that there are researchers with a different sense of what science should be all about.

Nevertheless, this institutionality has a large amount of power in modern society due to its wide legitimisation: power to define the "best" means for the transformation of reality; power to mobilise resources in order to concretise those means under the form of agronomic practices; power based on the acceptance of that technology by "the people." This concentration of power in the institution of science leads to the existence of a subjugated and ignored knowledge: the knowledge that people develop in their everyday lives, based on the multiple experiences that they have in their relationships with nature and other human beings. Its subjugation implies not only that its arguments are not listened to by modern science, but also that its agents of production —people— do not themselves value it to its full extent.

The power of this institutionality (as Foucault, 1981, has indicated) is drawn from a network of different organisations ranging from universities to the corporations' private laboratories and the state's scientific departments. The "fluidity" of the network allows for an homogenisation of scientific practices and thought, and for the spread of the rationality of administration. Moreover, the network does not confine itself to scientific institutions. It finds its way into other networks, such as the ones that work under the rationality of the market, through common points of contact such as private laboratories and private funding agencies. In this way power circulates from one network to another, transforming the balance between the different networks and subordinating some of them to others.

In the current situation we find that the institutionality of science is increasingly becoming subordinated to private interests. This subordination has followed two complementary routes. The first has been an increasing emphasis on the private appropriation of knowledge. One may note the large market for knowledge where a cloud of licenses, copyrights and patents has displaced and confined the social character of knowledge to the limited field of the social sciences. A second route has been the increasing role of corporations in the distribution of resources for the development of science. The financial power of large corporations has allowed them to establish the parameters for the direction of scientific research in certain fields without actually contributing the bulk of the necessary research funds. By establishing research funds in certain specific areas for academic organisations, they have encouraged the development of ideas and practices that are directly relevant to their private interests.[1] This tendency has some history in the Canadian prairies.

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[1] An early work discussing American examples was Hightower, 1973. For recent Canadian works that discuss the growing corporate influence on campuses see Turk, 2000, and Tudiver, 1999.

In one example during the frontier period the introduction of "dry land farming" technology helped to usher in domination by large, U.S. farm machinery firms (Shepard, 1984). Also, Taylor (1994) describes the role of educational institutions in "fashioning farmers" and influencing the agrarian movement in Manitoba before 1925.

This trend became more pronounced during recent years, in which the financial crisis of the state resulted in the reduction of research funds, forcing universities to increasingly seek funds from private sources. This increased the potential for academic research to follow the routes defined by corporate interests. This has important consequences for the adoption of specific technologies by agricultural producers. Given the fact that universities, and to a lesser extent public scientific organisations, have enjoyed a favourable recognition from most segments of society, the results of their activities have the stamp of legitimacy and, consequently, are typically accepted. Thus, research results that directly support the expansion of corporate interests benefit from the legitimacy of scientific, objective research. In this way, the legitimacy of science has trickled down to the corporations, which are able to present their products as the result of scientific practices and, accordingly, backed by a scientific process that, in itself, claims to be neutral and objective.

To summarise, the process of institutionalisation of scientific knowledge is characterised by three trends that complement each other. First, it displaced and marginalised common knowledge to the terrain of subjectivity and distortion by emphasising the uniqueness of scientific knowledge in the search for truth and understanding. Second, scientific practices have become immersed in a rationality of administration, where respect for rules and procedures tend to displace creativity. And third, the institutionalisation of science means not only the emergence of specialised organisations and agents but also the adoption of a perspective where private corporate interests tend to define the direction of the scientific process. These tendencies concentrate the power of knowledge in both academic and private enterprises and subordinate farm people to a position of simple agents who implement the technological packages. Furthermore, this subordination is based on the consensual acceptance by many farm people of the virtues and potential of technology, a legitimacy that is the real basis of that network of power. In simple, graphic terms we have the establishment of a technology that takes away from farm people the capacity to know and control it, degrading farm labour and destroying its potential for human development.

The State and Technological Dependence

This graphic picture becomes more complex when we add the state. It is important to realise that the continuous loss of understanding and control by farmers is not entirely the product of an objective and neutral development of the productive forces. Neither is it a product of an unstoppable internal logic of capitalism that "seeks" to destroy the remnants of a feudal mode of production. The process, rather, is the product of a specific class struggle that takes place around the productive process. It is in the fluid dimensions of politics and ideology where we must find the roots—and the solutions—for this degradation of farm labour.

According to some authors (Mouffe, 1983; Marglin, 1982), the purpose of most industrial technological development has not been to increase productivity, but rather to subject labour power to the direct control of the owners of means of production. In order to increase the extraction of surplus value owners of capital attempted to control labour as much as possible by using management strategies of continuous supervision of labour and/or its confinement to repetitive and routine activities. Workers have resisted these attempts with variable success (Stark, 1982). So class struggle has been a central dimension in the productive process of each capitalist unit of production.

The process of incorporation of modern technology in farm production has had the same purpose: the subjugation of farmers in order to increase the profit and market share of the corporations. Corporations usually have not tried to establish full control over farm labour given their incapacity to supervise it on a daily basis, but rather to control the decision-making process within the farm. By designing and commercialising complex agricultural inputs they take away from farm people their capacity to know and control those inputs. The expected result is a farm family who will be eager to follow all the indications of the corporations in order to use, maintain and replace those inputs in another words, passive producers eager to spend their money on products suggested by agribusiness. This process, sought by corporations, does not take place within the four walls of a factory, but rather in the public spaces of the market. Complex advertising campaigns and an array of extension and demonstration activities—some of them through government experimental farms—allow corporations to reach farmers and offer them a "paradise" of technical inputs. To this extent, the process involves not only the confrontation between farmers and their communities and the couple constituted by corporations and academic institutions, but also the state as an agent that defines and implements the rules of the market.

The state, as the most important organiser of civil society, plays a central role in organising markets, a role in which it supports the predominance of large corporations and their technologies in the crucial setting of economic exchange. It mediates the confrontation that takes place in the market by establishing the conditions and the legitimacy for the predominance of the new technology. An example is the case of experimental farms, which not only test corporations' products but also disseminate information about them, and in some cases advocate their adoption among farmers.

Why does the state support large corporations and the existing institutionality of science? In order to develop an answer to this question we have followed some ideas suggested by Offe and Ronge (1982). Rather than sustaining a deterministic view where the state is seen as the prisoner of a capitalist class or a capitalist structure, we see the state as an institution that seeks to resolve the tensions and conflicts in civil society in order to ensure the normal reproduction of the whole society. Hence, the state tries to support every actor's interests in the civil society. However, the task is not easy given the fact that the state's own reproduction is dependent on revenues generated in the economy and its legitimacy rests to a large extent on economic stability. Thus, state support for the corporations is directly related to their predominance in the national economy. They constitute the "backbone" of the existing economic structure and, consequently, one of the main sources of state revenues. It is more than convenient for the state to sustain the conditions for a stable and healthy development of the large corporations. Furthermore, this support acquires an ideological consistency within the state to the extent that the technological products of the corporations are backed by a scientific legitimacy. In other words, the existence of a scientific institutionality allows state officers to believe and argue that the adoption of new technology is not only good for the existence of a healthy economic environment, but also that it will contribute to a sounder productive process.

However, the relationship between the state and the corporations is not easy and smooth. The state, in order to acquire and maintain legitimacy among people, must appear neutral. This appearance of neutrality means that the state must satisfy at least some of the interests of those groups who are in objective opposition to the corporations. Adopting an image from Nun (1982), the state must listen not only to the hero that occupies the centre of the stage in the tragedy of modern capitalism, but also to the dark shadows that constitute the chorus. In order to do this the state also has developed a rationality of administration, where it adopts a set of rules and procedures that are claimed as universal in character. This neutrality is based on the strict observance of the rules, rather than on establishing conditions for equality. But in adopting this rationality, the state becomes prisoner of its own rules and, accordingly, it can never become a full supporter of the corporations. The rationality of the market calls for an absolute free market, where corporations can destroy any resistance by weaker business and by the labour force. But this market rationality cannot be implemented to its full extent because of the existence in the state of a rationality of administration that forces state officers to define and implement rules that limit, even to a minimum, the freedom of corporations. Nevertheless, the rules of the state tend to support capitalism in the long run to the extent that the state cannot ignore the dominance of this mode of production in the national civil society.

The Process of Resistance

The process, carried to its extreme, suggests a sombre future for farm people. It has altered their situation of relative independence and it could transform them into a mass of small producers entirely dependent on instruction booklets provided by corporations, universities, and state agencies. One is not required to have a large dose of imagination to realise that agricultural production, in that context, assumes the form of an assembly line where execution is separated from conception in the classical Braverman sense, but with the exception that production risks are assumed by farm producers.

The future, however, may not be so bleak. Here and there it is possible to perceive responses by farm people to the enclosure of knowledge by the institution of corporate science. Groups of farmers continue to be aware that the blind acceptance of modern technology contradicts their rationality of reproduction. This awareness is the basis of what Gramsci called the "nucleus of good sense," from which a new worldview emerges. The response does not usually involve a total rejection of the corporate technologies, but rather a transformation of them according to the needs of the community. Examples of this transformative capacity abound in the culture of rural Canada. The work of historians such as Hislop, op. cit., and Isern, op. cit., testifies to the depth of this tradition (*see also* the article by Faller in this volume). A continuing "argument" between farmers and Monsanto over the most effective mixtures and application rates for the herbicide "Roundup" is widely recounted in rural prairie communities. Recently, Melfort-area farmers started a company to try to manufacture generic glyphosate, the active ingredient in Roundup (*The Western Producer*, 3–10 March, 1988). Farmers commonly modify and rebuild tractors and combines (for a "tractor" example, see *The Western Producer*, 5 May, 1988). And inventing grasshopper 'harvesters' has been a favourite pastime of prairie farmers, the most recent and, it appears, successful one coming to light in 1988 (*The Western Producer*, 10 March, 1988). As well, farm people have been active promoters of associations concerned with environmental problems, soil degradation, organic farming, specialty crops, marketing associations, and others. These examples indicate that farm people have a tradition of struggle over their capacity for knowledge and control. Indeed, each productive process is a struggle where corporations and the institutionality of science try to displace those capacities from farm people, who in turn resist with differing degrees of success. Farm people are not always passive recipients of new technologies, but rather active agents who seek to bring them into their sphere of control.

Nor are they the only ones who resist the domination of corporations and the institutionality of science. In some scientific institutions there is a tenuous but persistent reproduction of a nucleus of resistance to these tendencies among those who argue for the development of alternative epistemologies and for a democratisation of the institutions of knowledge. A fascinating and, from the point of view of our concerns, important, problem is how bridges of common interest between those who seek alternatives in agriculture and those who seek alternatives in science have been established. In part, the process is facilitated by the contradictions inherent in the relationship between the rationality of the market and the rationality of administration, for example between corporate control of technology and the needs and demands of a skilled farm population. These contradictions open spaces for the development of alternatives and, perhaps, for a more appropriate agricultural development.

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Canola: A Cinderella Story

Lawrence Busch

Nature is not natural: the stars, the trees, the rocks, the earth are all products of human creation. If you do not believe that, reflect on the fact that when Aristotle looked up there several thousand years ago, he saw stars as circles that were painted on the celestial sphere and we see them as gaseous balls that are hurtling through space at tremendous speed. Our ancestors saw plant growth as one of the great mysteries of life; we see it as a result of proper fertilization—get your N, your P, your K, and your micronutrients correct and plants seem to grow.

But how do we do this? How do we make nature? We make nature in part by dividing the world into categories. Of course, the categories we divide the world into are not the same everywhere. Scientists have their so-called scientific categories but all cultures have categories which they use to define what nature is and to divide nature up in a variety of ways. Furthermore, in dividing nature into categories, we don't just simply divide it; we also impute meanings to natural objects.

We almost make nature by assigning values to natural things. For example, if I told you that I had a dead tree in my living room, you would say "What in the world has this guy got a dead tree in his living room for?" But if I told you that I had a dead tree in my living room at Christmas time and it was all decorated with Christmas bulbs, you would say, "Oh, of course, now I understand." Because I changed the set of meanings, I changed the set of values associated with that dead tree.

In addition, it is important to emphasize that we collectively make nature, so to speak, rather than doing it as individuals. In fact, we are all born into a world which has already been divided into categories. At first, we take all of those categories as natural. So when we hear that the world is divided for example into trees and grasses, we all see that as perfectly reasonable; that's just simply the way things are. Or is it?

One way of making nature is through what we call agriculture. We might define agriculture as a way of making nature reveal itself selectively. For example, for the last ten thousand years, give or take a few, farmers have been selecting plants and animals. Plants have usually been selected for the most edible parts; animals have usually been selected in part for their docility. In selecting plants and animals, farmers also restructure ecosystems. They restructure the fauna, the weeds, the insects, the pathogens, and they also wind up restructuring society. Why? Because all of this restructuring, all of this selection, requires values, decisions, goals, a whole range of choices that we make collectively about the kind of nature we would like to have.

Another way of making nature selectively is through science and technology. Here again, we might define science and technology as ways of selectively revealing aspects of the natural world—selecting from an infinite number of aspects that we might conceive of revealing (Idhe, 1991). Science and technology enhance perception, as for example, an overhead projector enhances your perception of a page of text. Without the projector, an audience would have great difficulty seeing the same page. Science and technology also create new kinds of perceptions. For example, x-rays create a whole new kind of perception. In addition, science and technology quite obviously create an almost endless flow of new objects and processes which include new machines and new kinds of living organisms such as plants and animals.

With that as an introduction, I want to talk specifically about the development of canola. Moreover, since canola is sometimes called the Cinderella crop (Rapeseed Association of Canada, 1974), I will talk about it using the metaphor Cinderella. If we think of a play about Cinderella, we might call Act 1, "The Problem is Defined." Why did Canada decide to develop canola in the first place? There are a number of reasons for this. Let's look at some of the more important ones.

First, in the late 1940s soon after the end of World War II, what we now call the Cold War began. Canadians could peer across the northern frontier and "see" the Soviet Union. Furthermore, during both the first and second world wars, it had become rapidly apparent that fats and oils for domestic use were strategic resources (Dryden, 1974). Without an adequate supply of fats and oils, there would be an important dietary deficiency. In addition, for many foods, fats and oils are essential to the cooking process. Therefore, there was a great concern about this during World War II, although little was done. Some rapeseed was grown, but it was used entirely as a marine lubricant—to replace the petroleum-based products used on warships. After the war Canada began to seriously address the issue. Canadians soon realized that, in fact, they were not self-sufficient in edible oils. The cold war provided the impetus to address the issue. Food self-sufficiency obviously was of concern, but there is little question that the Cold War was the driving force behind the search for alternatives (Hulse, 1992, personal communication). Several different sources of oil were examined, including sunflower, linseed and soybean, but all posed what appeared to be insurmountable problems. Gradually, it became apparent to scientists that rapeseed oil looked most promising. At the same time, however, some research had been done that suggested that there were certain anti-nutritional or perhaps even toxic compounds in rapeseed oil. As noted above, during the Second World War, rapeseed oil had been used as a marine lubricant. The Canadian government had encouraged farmers to grow rapeseed oil during the war. A peak in production was reached in 1948 when the price was at six cents a pound. But without wartime price supports production collapsed by the early 1950s. Canadian farmers knew how to produce it but there was no one who wanted it. By this time, the project had been defined by the scientific community as being one of eliminating the two problematic compounds—one in the oil (erucic acid) and one in the meal (glucosinolates) (Boulter, 1983; Carroll, 1959).

In Act 2, the wicked stepmother, also known as erucic acid, comes in. In the early 1950s, conventional plant breeders who wanted to examine the fatty acid composition of an oil had to use a technique known as distillation. To simplify, the oil had to be boiled. Since each component of the oil (each fatty acid) had a different boiling point, each would vaporize at a different temperature. If the temperature was raised very gradually over a long period of time, the individual components could be boiled off and separated. In order to do this, huge quantities of seed were needed. Litres and litres of oil were needed in order to determine how much of this allegedly toxic compound was in the oil. Unfortunately, in order to determine which plants were going to be low in this toxic compound, it was necessary to find out how much of it was in an individual seed. This was the case because the oil is part of the offspring of the plant, rather than part of the maternal plant. Every seed on every plant has a different amount of each fatty acid. Therefore, the distillation techniques were of no value to breeders.

What was needed was a new procedure for analyzing fatty acid composition. At the time, a new scientific instrument known as a gas-liquid chromatograph, or GLC, had been developed. It appeared that it might allow one to separate very small quantities of an oil. Burton Craig, a scientist with the National Research Council, located at the University of Saskatchewan, acquired a chromatograph. By modifying it, he was able to find a way to reduce the volume of oil needed from several litres to a few grams and eventually to the point where a minute amount of oil was needed (Craig and Murty, 1958). Meanwhile, two plant breeders, Keith Downey and his student, Bryan Harvey, at the Agriculture Canada Research station in Saskatoon, reasoned that if you cut the seed in half you could use one-half of the seed for the analysis and the other half for plant breeding. Using this technique, they were able to very rapidly remove the erucic acid from the plants and develop an essentially zero-erucic-acid variety of rapeseed in just a few generations (Busch et al., 1994).

This was fortunate because at the International Rapeseed Conference in 1970, scientists at French and Dutch laboratories both announced findings based on rat studies (Rocquelin, Martin and Cluzan, 1970). They concluded that rapeseed oil that was high in erucic acid caused lesions in the hearts of rats. By analogy, they suggested that the same might be true of human beings. Very soon afterwards, the Food and Drug Directorate announced that sales of high-erucic-acid rapeseed for cooking oil would be prohibited after a certain date. But by the time of the announcement, the breeders succeeded in removing most of the erucic acid. Within a very short period of time they were able to replace virtually the entire crop with the low-erucic-acid varieties.

But there was still another problem associated with the meal. This brings us to Act 3: Glucosinolates, or the evil stepsisters. It was well known that rapeseed meal was goitrogenic; farm animals that were fed large quantities of it developed goiters. If only a small amount of rapeseed oil was produced, this was not too problematic. Whatever meal was left over could be used as fertilizer. But if oil was to be produced in very large quantities, a better solution had to be devised—one that turned the meal into a marketable product. Furthermore, Canadians were doing this in an attempt to compete on the world market in addition to becoming self-sufficient in oils. In order to enter that world market, they had to compete with soybeans. Not only was soybean oil used in cooking, soybean meal was a highly nutritious source of protein in animal feed.

First, they attempted to solve the problem by developing new crushing methods that they hoped would eliminate the compound responsible for goiters in animals. That approach turned out to be fairly complex and not terribly successful (Gray, 1979). New efforts at plant breeding were attempted which gradually reduced the glucosinolate level. Two varieties—one of the so-called Polish type and one of the so-called Argentine type—were released in 1974 and 1977 that had low erucic acid and low glucosinolates as well (Bell and Wetter, 1974).

This brings us to Act 4 in which Cinderella finally triumphs. Once these two undesirable properties were removed, it was decided that the name of the crop had to be changed as well. People still associated the old name with the potentially problematic compounds. The name "Canola" was created to identify the modified crop. Also, very conveniently—no one really planned it—this occurred at just about the same time that health authorities around the world began to realize that the consumption of large quantities of saturated fats was unhealthy. To the delight of many Canadians, canola had very low levels of saturated fats; hence, it was seen quickly as a very desirable oil. In addition to that, canola had a good "chill test." That is to say, when you lowered its temperature, it did not get cloudy (consumers in North America and Europe tend to like cooking oils that are clear). This was also in its favour. Finally, it had less moisture in it which made it good for deep frying. The fast-food industry soon began to switch to canola.

Virtually overnight, canola became the princess of oilseeds. As the area planted to canola grew, the area planted to oats—largely to feed horses—declined. As horses were replaced by tractors on Canadian farms, canola became the favoured crop to replace most of the oat acreage. Canada very rapidly moved into the position as the world's largest exporter, though not the largest consumer, of rapeseed or canola oil. Canadians themselves changed their dietary habits. Butter consumption declined, to be replaced largely by rapeseed and later canola oil (Busch et al., 1994).

What can we conclude from all this? One of the things that must be emphasized here is that while there was some very clever science accomplished, that was nowhere near sufficient to do the job. Many other things had to happen. First, this transformation required very little in the way of new infrastructure—the railroads were already in place; the elevators were already in place; farmers could use their wheat equipment fairly easily with relatively minimal modifications to grow canola—so this was a relatively easy transition with respect to infrastructure.

Second, canola offered significant advantages over other oil sources that were available at the time. That also made it very important. Scientists had very little to do with the fact that it had those advantages. Third, canola offered prairie farmers a new crop for which a market was developed. Given the relatively small choice of crops on the prairies, this was of inestimable value to Canadian farmers. Fourth, the problems that were posed by the transformation of rapeseed into canola required that scientists in different disciplines work together in unusual ways. Chemical engineers, biochemists, plant breeders, and a variety of other scientists worked together toward a common goal. Perhaps most importantly, if the Canadian state had not provided the research money, changed the rail freight rates so that canola was treated in the same way as wheat, developed overseas markets and provided a legal framework for co-operative organizations, canola would never have been successful.

Finally, the creation of canola changed both nature and society simultaneously. Whether we are happy or unhappy about it, this point needs to be emphasized. A new product, a new piece of nature called canola, was created. Rapeseed was radically transformed, but society also was radically transformed. It cannot be said that somehow technology changed society, nor can it be said that society changed technology; the two happened simultaneously because they were part and parcel of the same thing. Why? Because without the state establishing the possibility of a market for this new crop, changes would never have occurred. Without state support in the form of research money, the scientific and technical research would not have been attempted. All of this was absolutely essential to its success. Science alone only provided one small, although vital, piece of the overall puzzle.

In recent years, there have been some interesting developments. First, there have been changes in intellectual property law on a world scale (Busch et al., 1995). Much research that used to be done in the public sector, where at least in principle it was publicly accessible and where there certainly was some level of public accountability, is now moving it into the private sector. This is occurring throughout North America and Europe. Some powerful interests want to create a uniform system of intellectual property rights on a worldwide basis. Yet, making research private essentially is giving away a public good. It cannot be said more simply than that. It involves giving away the products of research expenditures by the public sector around the world to the private sector so that they might make an additional profit from them. Basic agricultural commodities are price and demand inelastic; that is to say, consumption does not change much in response to changes in price or demand. In the long run, therefore, there is a tendency for the incomes received by farmers to decline both absolutely and in relation to other members of society. The expansion of the "middleman function" that is due to the widening of intellectual property rights allows companies to take a larger proportion of the return from farming, compounding the farm income problem. If the corporate sector makes more, someone else has to make less.

Second, the crushing and processing industries have become much more concentrated than they were before. Farmers have fewer choices about where they are going to sell their crop and in some places they have no choices—at least no practical choices. A farmer always has the choice of shipping canola 300 or 400 miles, but that is usually not a viable, economical choice. In addition, although the data are difficult to find, the evidence suggests that farmers' share of the value added, that is to say, farmers' share of the price of the final product, be it the oil or the meal, has gradually declined over time as it has for virtually every other agricultural commodity for which these kinds of scientific and social changes have taken place.

What are the implications? First, despite the fact that public support has made canola a success, the benefits, such as they are, that it brought to the prairies are essentially being given away (Kneen, 1992). The same kind of argument can be made for most major agricultural commodities. Canola is not particularly special.

Second, technical change has been treated as a natural rather than a social process, thereby masking the interests behind particular changes. In other words, people have assumed that scientists were not making social choices, that they were only making technical choices. What must be emphasized here is that one cannot do one without the other; making a technical choice is making a social choice. The two are part and parcel of the same phenomenon.

Since the products of technoscience, or science and technology, transform not only nature but society, we need to develop institutions that encourage public debate about them. In short, we need to ask what kind of nature we want. Some may find this an unusual or even outrageous perspective. Yet, many of us read the critics' reviews before we go to the movies. Many of us read what critics write about art or about literature. One of the curious things about Western society is that when people raise critical questions about science, they are told, "Well, you don't know anything about science so how could you possibly raise a question like that?" But there is no inherent reason why science should not be subjected to the same kind of pointed criticism to which we subject literature, art, theater and television. In fact, given its awesome power to transform the social world, it is perfectly reasonable to request that the same be done for science. There are a number of ways in which that might be done. There have been novel and successful experiences in Denmark, where they have developed science policy committees of interested citizens (Sclove, 1995). Other approaches are being experimented with in other parts of the world. Other participants at the conference have suggested other approaches. We are new at this; we really do not know how to do it well. But this is a matter of considerable urgency, not just as it relates to agricultural commodities, but as it relates to science in general. Science is simply too important to leave in the hands of scientists.

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SECTION 3

COMMUNITY

Innovation, Durable Communities, and Long-Haul Economies

Michael E. Gertler

There is room for debate about the sustainability of agricultural communities on the Canadian Plains. Dust storms, the destruction of prairie flora and fauna, and significant impacts on water quality and human health demonstrate that our farming systems have not wholly met the standards of environmental sustainability (Rowe, 1990; Altieri, 1998). Moreover, the twin crises of household and community survival experienced by many farm people provide hard-edged evidence of insecurity and impermanence. The economic, social, and political dimensions of the contemporary agrarian crisis are documented in several chapters of this volume. The consequences of decades of coping under duress are reflected in the exodus of thousands, and in the depleted reserves of many of the rural families and communities that have held on. Even those who have attained some success have had to do so in the context of uncertainty and loss (Dyer, 1997).

Achieving something approaching sustainable development in resource-based industries and communities is not a simple goal. Few primary industries or associated settlements can boast great success in pursuit of long-term sustainability. Sustainable development implies much more than mere persistence (Beckley, 1998). Sustainability implies development that addresses the broad social and economic needs of the community while maintaining the ecological health and productivity of the resource base. Specific adaptations are always worked out in a particular regional context. This requires a sustaining culture that generates appropriate technical and organisational solutions, and removes barriers to sustainable development. Moving closer to sustainability in the agricultural Prairies will require organisational renewal and innovation in the forms and practices of farming and community life. New kinds of individual and collective ingenuity will be needed. It will be necessary to address immediate challenges and the underlying conditions that give rise to new crises.

Farm and Rural Cultures

Agriculture involves "cultural practices" in a social as well as in a technical sense. In its broadest sense, culture encompasses the tools, social arrangements, and ideas created by humans. Material culture includes technologies of production and consumption. Social culture includes institutions and organisations, both formal and informal. Ideological culture includes the philosophical frameworks or systems of understanding we invoke in order to make sense of the world (Clark, 1989:159). At all levels these cultures are constantly constructed and contested. Culture is a renewable resource, a connection with the past and the future, and a foundation that imparts meaning and value to activities, relationships, things, and places (Kleymeyer, 1996; Hoff, 1998).

When it comes to managing a bountiful and sustainable landscape, cultures provide codes of conduct and social bonds that are as important as the genetic codes of improved crops and livestock. Where sustainable resource management is concerned, a culture that celebrates the special character of local ecologies, and the central role of humans in the environment, is crucial. Cultures like cultivars benefit from careful selection, weeding, and nurturing. Some of the expectations and traditions that cultures carry will not yield sustainable farms or rural communities. Some cultures are self-destructive.

The ecology of the grasslands and parklands can provide lessons about sustainable prairie cultures. As Paul Gruchow (1995) has observed, the prairie is patient, puts down deep roots, and grows richer with age. The prairie turns adversity to advantage: periodic crises are opportunities for renewal. The prairie is utilitarian and beautiful. The prairie is tolerant and cosmopolitan. It welcomes visitors and newcomers, plants, animals, and people. Diversity makes the prairie resilient and community is a key to survival:

> The prairie is a community. It is not just a landscape or the name of an area on a map, but a dynamic alliance of living plants, mammals, birds, insects, reptiles, and micro-organisms, all depending upon each other. When too few of them remain, their community loses its vitality and they perish together. The prairie teaches us that our strength is in our neighbours. The way to destroy a prairie is to cut it up into tiny pieces, spaced so that they have no communication (Gruchow, 1995: 78).

The predominant culture of North America devalues community commitments, neighbourly exchange, and collective action—many of the social adaptations necessary to ensure high quality sustainable living on the Canadian prairies. Rather, the dominant culture tends to emphasise a narrow, market-based rationality. Good (farm) management is measured primarily by financial success (Dudley, 1996). Good government is gauged by fiscal frugality. This commercial culture leads us to embrace new technologies but to be reticent about social innovation. The market is naturalised while nature is denaturalised. The marketplace is perceived to be primordial, spontaneous, and enduring. It is viewed as the most legitimate arbiter of actions and outcomes. Other places are seen as transitory. Other social, economic, or ecological frameworks for recognising value and setting priorities are viewed as less reliable. Meanwhile, social dislocation and disorganisation are portrayed as necessary costs of development.

The need for more sustaining institutions and worldviews implies that sustainable development is a cultural project. There is a need for new modes of thinking and acting in support of the good life and collective security. Sustainable futures for agricultural communities on the Canadian prairies will require a new wave of pioneering that includes conscious steps to reinvent organisations and reorient development. This means building on the best local traditions while canvassing the world for alternatives. It implies recognising the cultural diversity already present in the region and using this cultural capital to network with communities elsewhere that are working on a transition to sustainability. It implies deliberate steps to foster a climate for development that encourages a more holistic entrepreneurship. There is need for new options for participation in the sustainable rural economy. These are challenges, not prescriptions.

The Social Ecology of Durable Farm Communities

Sustainable rural development depends on a sustaining social ecology, that is, appropriate relations "between people and people and nature" (Allen, 1993; Bookchin, 1995). Ecologists look at the circulation of nutrients, energy, water, genetic materials, and so on. If we extend this approach to the social ecology of rural regions, the flows would include people, capital, commodities, information, ideas, and power. The social ecology of place includes social, political, and economic organisation; and relationships between men and women, old-timers and immigrants, and majorities and minorities of all kinds. The arrangements under which people have access to land and other resources are also central aspects of a sustainable social ecology. This includes the formal and customary regulation and enforcement of these rights and rules.

A sustainable social ecology implies a dynamic, synergistic relationship between resource-based economic activities, social and institutional arrangements, and communities of interest and place. While the structures and processes of the larger economy set many of the parameters, local communities remain important contexts for integrating economic, ecological, and communal interests in the management of natural resources. It is local communities that have a joint interest in making a living and in managing resources to ensure long-term viability of the economy (Rogers, 1994). While environmental and social ethics lie at the root of any project to build a sustainable future, these values, orientations, and practices are not developed or sustained in a vacuum. Local communities are also important sites for the transmission and reinforcement of ethics.

Working together on projects that yield lasting group or community benefits provides a foundation on which to develop understanding, trust, and commitment (Kleymeyer, 1996). When communities and groups are involved in transformative change there is a dance between ideas, knowledge, and action that has been summarised in the phrase "cognitive praxis" (Hassanein and Kloppenburg, Jr., 1995). Social movements and collective projects create "new knowledge and new organisational forms and principles" (Hassanein and Kloppenburg, Jr., 1995:724). Engagement in such social projects leads to shifts in the consciousness of participants. The making and content of this new way of thinking arises from the dynamic interaction of theory and practice (praxis). The most significant learning takes place in a context of problem solving and efforts to develop practical alternatives.

Social interaction in local and extra-local networks is a crucial part of this process. The characteristics of these networks and associations have important implications for the sustainability of economic activities and community life (Flora, 1995). These links involve flows of resources that may either strengthen or deplete the local culture. Under the less favourable scenario, the local and extra-local connections are limiting in character and siphon off the resources, energies, and allegiances of local people. The more positive prospect is one in which such connections link communities to resources and opportunities in a manner that enhances the whole of community life.

Diversity and quality considerations matter in the case of networks. The video gambling terminal is an example of a high-tech but low quality link to the outside world. Similarly, one can use personal computers and the Internet mainly to access fan clubs, sports scores, hate literature, and pornography, or one can use them to access information about sustainable alternatives and to form grassroots alliances for sustainable development. One technology can either undermine or renew the vitality of local communities. It depends a great deal on content, context, and application. Moreover, the Internet and other tools for long-distance communication cannot adequately replace face-to-face interaction. Telecommunications work best among people known to each other. The healthy functioning of local and more far-flung communities depends heavily on trust, understanding, and interpersonal allegiances. There must be opportunities to work together and to experience shared accomplishments.

Rural communities face many challenges to their social, political, economic, and environmental sustainability. As supporters of community-based strategies for development have observed, communities that find ways to renew and revitalise are usually places that have overcome barriers to participation. This points to the need for collaborative styles of leadership that includes a greater share of the populace in all its diversity (Flora, 1995; Wells and Tanner, 1994). Inasmuch as rural communities are divided along race, ethnic, or religious lines, or on the basis of politics and philosophy, there are severe barriers to collective action. Such splits may not seriously incapacitate urban places given their larger population and economic base. However, such divisions among rural people can seriously handicap the sustainability of small communities. This distinction stems both from the particular characteristics of local communities and from the particular kinds of actions such communities must take to achieve a more sustainable form of development.

Resource-based communities are dealing with a broad range of production and consumption issues that impinge on sustainable development. Effective action on many of these matters involves gaining support from a considerable portion of the population. In other words, the implementation of local strategies for sustainable resource use may require a relatively robust form of community solidarity. A small community cannot run a successful recycling program without high rates of participation. Nor can such a community protect biodiversity without considerable participation by those who work the land. Similarly, non-chemical strategies for controlling agricultural pests may require co-ordinated action over a large area. Moreover, the need for high levels of solidarity and participation are not merely a question of ecology. Most people will not make long-term investments or sacrifices unless they have confidence that gains and costs will be shared equitably. Long-term investments also require a sense of continuing connection with the locality. There has to be confidence that people one cares about will be around to reap the benefits of conservation and careful husbandry (Gertler, 1994).

Sustainable management of local resources may require a fairly sturdy form of local community but there are special challenges to generating such levels of solidarity. In an era characterised by identity politics, rising expectations for personal autonomy, and multiple subcultures of consumption, it is likely that some members of rural communities will refocus their energies elsewhere. If the community is under duress, there is always the risk that the "smart money" will disinvest before the economy slips too far. Investments in the local economy and in community projects are predicated on the expectation that others will follow suit. When some members of a small community withhold support or opt for a different approach, this can be divisive and can undermine confidence in the ability of the group to overcome obstacles to local development.

These dynamics highlight the need for tolerance and the need for genuinely democratic forms of decision making in local jurisdictions. Creating viable communities of place requires reinforcing the connections between two major forms of community, that of shared interests and that of shared geographical context (Beckley, 1998). It is important that rural areas find organisational solutions that can help balance the centrifugal influences of outside involvements, competitive individualism, group jealousies, and historic antipathies. The survival of rural communities puts a premium on resolving and transcending differences. Otherwise, the lack of critical mass and group coherence will become barriers to effective pursuit of common causes. The implication is not that differences should be ignored or repressed but that rural communities confront a particular necessity to invent and adapt social practices that mitigate the impacts of differences—real or imagined.

An absolutely central part of this project is the reinvention of relations between Aboriginal and non-Aboriginal communities (leaving aside for now the divisions within these large categories). The rural prairies face a historical challenge that parallels the problem of the Old South: reduce racial inequities and tensions or pay an ever-higher price in terms of social costs, lost opportunities, and outmigration. Prejudice, discrimination, and enforced separation poison the well of social solidarity and trust. Sustainable and attractive futures for rural prairie communities will depend on new alliances, greater sharing, and respect between groups and peoples. There is no viable alternative given demographics, shared interests in immobile resources, and the necessity for collaboration in regional and community economic development (White, 1999). The large numbers of young people in rural Aboriginal populations are an obvious counterweight to the ageing elders that make up a disproportional share of the non-Aboriginal rural population. Whatever the future of self-government on reserves, where infrastructure is concerned there is an obvious necessity for collaboration. While it will be necessary to elaborate new agreements for sharing of education, health, recreation and cultural facilities, it is also obvious that there is much to be gained by partnerships and joint ventures in privately or community held business. The pooling of capital, markets, contacts, and experience can greatly strengthen entrepreneurial initiatives in both sets of communities.

The cultural growth and renewal that is necessary for sustainable regional development also depends on expanded dialogue and exchange. Ecologically advanced development is one promising area for initiating collaboration. Whether we are talking about fishing, hunting, farming, ecotourism, conservation, recycling, or resource sharing, there is much to be gained by mutual exchange in terms of perspectives and approaches. Environmental projects are a starting place for joint action. This is one of the spheres in which Aboriginal communities particularly, can add important cultural capital to the development of a sustainable regional economy (Bernard, 1994). Moreover, with their newly expanded land area, many bands have additional reason to consider alternative approaches to development of land-based activities. One place that the dialogue can begin is between alternative/organic farmers and those who are responsible for agricultural lands under band control.

The institutions of neighbouring and mutual self-help have a long history in rural Canada (Hedley, 1985). These social practices are mythic in some sense, and perhaps a more significant part of the past than of the present. However, both the ideal and the practice are founded on a fundamental awareness that farms and communities cannot thrive without a great deal of sharing co-operation, mutual aid, and forbearance. This understanding comes out of lived experience. Consideration and forbearance are necessary aspects of neighbouring and co-operation. There must be allowance for difference and respect for privacy. Neighbouring may require a long-term association with people who are quite different.

Co-operatives have been important as formal arrangements for achieving collective economic and social projects, and informal co-operation has been equally important for dealing with tasks that require extra hands. Mutual aid is practised to deal with emergencies—fires, accidents, death, or other special circumstances. This is a form of mutual insurance. Mutual aid is also a way to mobilise the labour, skills, and machinery necessary for tasks such as moving livestock, bringing in hay, or finishing a late harvest. It has also been useful for accomplishing certain domestic chores: caring for the sick, minding children, celebrating a marriage. Sharing saves time and capital in that equipment and other production inputs can be loaned, exchanged, or jointly owned. Sharing is also necessary where access to water or pasture is limited, inputs are lumpy (too expensive for one person or community to own), and facilities or services scarce or remote. Sharing and co-operation facilitate inter-generational transitions and the reproduction of family farms: children work for parents and vice versa. Parents and other relatives provide capital, land, machinery, and livestock to the next generation under concessionary terms or without any exchange of money.

Unfortunately, while co-operation has been vital to the survival and sustainability of rural communities, it is the institutions and practices of competitive individualism that generally receive more explicit support and allegiance. A crucial challenge, therefore, is to describe and explain the importance of co-operation for sustainable development of agricultural communities. It is also important to work out new co-operative arrangements adapted to the broader requirements of sustainable farms and settlements. A recent study of the social and economic significance of co-operatives in Saskatchewan points to some of the accomplishments and potentials of formal co-operation (Ketilson et al., 1998). Positive contributions were documented in many areas: stabilising local and regional economies, fostering a climate that encourages private and public investment, providing goods and services that would otherwise not be available, providing outlets for local suppliers, and facilitating partnerships between public and private sector organisations. Other contributions include outreach to provide services in remote communities, equity programs to facilitate employment of minorities, building strong links with related organisations in other regions, involvement in public policy and program development, leadership in community and charitable activities, and leadership development more generally. The record is, of course, uneven. It would be useful to emulate the most advanced practices in all these areas. Nevertheless, it is quite clear that in places such as rural Saskatchewan, co-operatives have played important roles supporting the social and economic reproduction of community.

Economic Organisations for the Long Haul

The chapter title refers to long-haul economies. This has two meanings connected to dual realities confronting agricultural communities. The first allusion is to distance and to long-haul transportation. The costs of servicing dispersed settlements and the rationalisation of transportation systems in ways that shift more of these costs onto producers are important factors affecting the viability of rural places. The second meaning of long haul alludes to time and endurance, as in "over the long haul." Long haul thus also connotes resilient economies and organisations designed to deal with both foreseeable and less predictable shocks and upheavals, and to yield long-term community-level benefits.

One of the paradoxes of agricultural economies has been the juxtaposition of widespread insecurity and insolvency in the farm sector with impressive growth in many of the corporations that supply agricultural inputs and handle agricultural commodities. The same dramatic concentration of wealth and market power can be observed in many of the companies that wholesale or retail their wares in agriculturally dependent communities. There has also been significant growth in rural manufacturing and service industries that benefit from a workforce with connections to farming—whether past, present, or future.

The challenge for sustainable rural development is qualitative as much as quantitative. What should rural communities seek and expect in terms of outcomes from economic development? What can companies legitimately ask of communities and what can communities legitimately ask of companies? Typically, rural people (and their governments) have not asked such questions or have settled for too little in return for their support and subsidies. Sustainable communities require firms that are not simply focused on maximising shareholder value (or management compensation). Sustainable development requires multiple bottom lines relating to a broader set of economic, social, and environmental objectives. What are the pertinent questions with regard to firms that are establishing, relocating, or expanding as part of the necessary diversification of farm-based economies? The following list provides a starting point:

- What are the costs to the community and what are the fiscal implications?
- What is the nature and quality of employment offered?
- How are staffing decisions to be handled in periods of expansion or contraction?
- Will the community be notified in advance re relocation or closure?
- Will management work with unions or consider alternative forms of participation?
- Is management committed to employment equity and to work life–family life compatibility?
- Will the firm support community activities and participation in civic organisations?
- What are the likely effects on other firms and are there opportunities for partnership?
- Is the fit good with other activities, and with a sustainable form of development?

Such questions point to some of the broader issues in regional development. Financial accounting at the level of the firm ignores many of the concerns that citizens should address. These other dimensions include community economic multiplier effects and what one could call the social and the ecological multiplier (see Ketilson et al., 1998). The social multiplier refers to positive and negative social impacts of organisations and activities. The notion of the ecological multiplier addresses ecosystem-level impacts of particular activities and is related closely to the concept of full-cost accounting.

What constitutes reasonable levels of performance in such areas? How can governments and development authorities advance the common interest in an authentic form of sustainable development? To complement the many kinds of assistance available to businesses, it would be useful to have a "Centre for Sustainable Regional Development" where people could access information on social, economic, and environmental impacts, on effective practices for improving performance in these dimensions, and on alternative paths to sustainable development.

Towards a Sustaining Rural Development

Respect and concern for environmental values must be strongly connected to respect and concern for the people who are the key actors in (and on) the environment. In an economy that views people as consumers, or as expendable factors of production, there is little room for strong ties with neighbours, or with the natural world. When making a living appears to depend on a tough attitude towards both nature and one's fellows, most producers will resist calls for more action on ecological, aesthetic, and ethical concerns. Many farmers and rural entrepreneurs have developed "thick skins" where such issues are concerned. There is little patience for "wasteland" and minimal concern for polluting water, soil, or air so long as the effects are not locally catastrophic. When the aesthetic of the productive landscape is closer to an industrial park than to any other kind of preserve, there is little community pressure on those who most egregiously exploit the environment and endanger their neighbours. Rather they are celebrated as entrepreneurial successes while the rest of the community absorbs many of the real risks associated with the industrialisation of agriculture.

Fortunately the conditions for positive change are not entirely absent. The situation is complex and the future is still in the making. There is debate and contention around farming technologies, around arrangements for maintaining rural infrastructure, and around appropriate agricultural institutions. Organic farmers, ranchers practising holistic management, band farms, fruit and vegetable growers using various forms of direct marketing, Hutterite farm colonies, and machinery co-operatives are all evidence of diversity, innovation, and room for manoeuvre. Farmers generally have strong emotional attachments to the land and to the landscapes that they work (Jean, 1997). Despite some inconsistencies, a certain environmental ethic is evident in the culture of agriculture. Many farmers claim concern for the environment and that they are taking steps to conserve resources. Although some of this is a substitution of rhetoric for action, more significantly it reflects a sense that conservation is an appropriate interest for the responsible farmer.

Farmers are often pushed or encouraged to cut corners where ecological issues are concerned. Environmental sensibilities may get repressed or reoriented towards other goals. Farmers can end up vociferously defending practices that they know may be ecologically risky. In other words, it is not that most farm people (and other rural residents) are blind to broader environmental and ethical concerns. Rather, financial pressures and the productivist culture relegate such matters to the back burner or, in a strange reversal, lead such concerns to be redeployed in defence of conventional agricultural practices

Like forest-sector workers, farmers can end up on the frontlines opposing environmental critics and regulators while defending what are first and foremost the interests of transnational corporations.

Commercially oriented, market-dominated rural development leads to shortcuts that short-circuit the regenerative capacities of biological systems and the reproduction of social systems—including rural communities and family farms. The result is a weakening of the social strands that connect individuals, families, neighbours, communities, and land in mutually reinforcing relationships of giving, receiving, caring, and enjoyment. How will rural people find the resources to resist a productivist market fundamentalism and to elaborate a more sustainable mix of practices and values? Traditional social and institutional pillars of rural communities such as families, churches, and local business associations are under duress. Moreover, each of these institutions has significant limitations when it comes to providing leadership towards a new ethic of sustainable development. Support for a more holistic form of rural development is likely to come from new sources as well as from the social, environmental, and health concerns of farmers and other rural residents. These new sources include world movements for safe food, food security, ecologically rational farming practices, humane treatment of livestock, and justice for farm workers and family farmers. Paradoxically these powerful social movements gather much of their strength from urban people who are far removed from the daily realities of farming and other rural livelihoods.

Authentically green development will require strategic alliances among urban and rural groups, and clear articulation of alternative agendas. It will be important for rural and urban rural allies in this cause to study the ecology, economics, and politics of the agricultural sector—what some would refer to as the political ecology of agricultural and rural development. This includes a dispassionate assessment of the development agendas of agribusiness firms and of the possible roles of democratically elected governments. At the forefront there must also be a clear understanding of how producers and their communities occupy centre stage in any legitimate and viable scenario for sustainable rural development (Vail, 1996; Waljasper, 1996). Sustainable development must be sustaining.

This approach will help in distinguishing among competing claims and proposals for sustainable development—to identify those proposals that satisfy strong social as well as economic and ecological criteria. For example, a critical political ecology of development will be useful for evaluating environmental claims made for new technologies such as agricultural biotechnology or precision farming (global positioning systems used to map fields, collect yield data, and calibrate the application of inputs) (Gertler, 1998a; Wolf and Wood, 1997). While advanced technologies will be part of the future of sustainable agriculture, these must be developed, selected, and applied in a context that puts agroecological and social concerns on par with issues of economic efficiency or commercial potential. Such an analysis will also help us in identifying the more enduring and satisfactory options for rural economic diversification (Gertler, 1998b). Sustainability and diversification are reciprocally linked in a number of ways. Both will involve information-intensive technologies, local research and innovation, and "the creation of backward and forward linkages within agriculture and between agriculture and other sectors" (Haney and Almås 1991: 113).

Sustainable rural development is a cultural project and an eminently political endeavour. It is an ambitious goal but its scope and radical character are ultimately also its greatest strength. As a concept and practice it can be useful in resisting developmental dead ends and for motivating innovations in systems of production and consumption. It can lead us to more elegant and ecologically sound technical solutions. It will also support and guide the development of organisations, institutions, and social arrangements that simultaneously satisfy a much more comprehensive set of criteria for efficiency and rationality (Flora, 1995). It can help us to build a rural future in which the interests of people acting as citizen, neighbour, elder, sister, and community member are fully paramount with those of the speculator, investor, accountant, and customer.

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The Myth of the Family Farm

Sharon Butala

When I was a child living in small towns and villages, and before that, in the northern bush where our father had a small sawmill, Saskatchewan seemed to me to be, not a *place*, but a sort of primeval background to the real world which consisted of *places*, certain points on the earth's surface, where real things happened and real people lived: England, California, Egypt, Ontario. Saskatchewan was only a holding area where one waited impatiently till one was old enough to leave and enter the excitement of the real world.

It seemed to me then that Saskatchewan had nothing to recommend it, except perhaps, a certain pine forest on the banks of the North Saskatchewan near Nipawin where I had once seen so many crocuses growing that at first they had been invisible, so that we children discovered them as one small clump that expanded and expanded to infinity as we ran from the base of that pine to the next, wildly, ecstatically, unable to assimilate such a paradise of those precious flowers, where before we had always had to search hard for them, and sometimes found none at all.

Or, I allowed Saskatchewan might be a *place* when, near Lake Kipabiskau each summer, our family came upon a field of tiger lilies blazing orange-red in the hot sun, and were warned by our mother not to pick them so they would always be there.

It was a place too, the day we rode with our grandfather on a hayrack pulled by horses, ducking to keep from being hit by the branches of willows and aspens, bumping over corduroy roads till we reached a small tree-encircled meadow. There we children ran shouting through the sun-and-dew-sparkled grass that reached over our heads, keeping well away from where our grandfather stood in grass to his waist, cutting the hay with a scythe; a thoughtful, rhythmic motion, repeated endlessly, all these years in my dreams, the blade glittering as it rises to strike the sun, falling, to disappear with a whisper in the thick, unimaginably green grass.

He was our mother's father, reluctantly in Saskatchewan after losing his Manitoba farm to three years of drought and then to the banker, alienated forever by foreclosure from the extended family of pioneers he'd been raised in, as was my grandmother, a farmer's daughter too, and my mother and her siblings.

It was my father's lifelong dream to farm, a dream he knew he would never fulfil. He had been born on a farm, had lived there the first six years of his life till, in 1911, his parents abandoned rural poverty in Quebec for a Saskatchewan homestead near St. Isidore de Bellevue, about seven miles from Batoche, which drought forced them to abandon too, during the Depression. Not one of their sons became a farmer, although all of them dreamt of it all their lives.

All of that, the pastoral dream, the family history of drought and dislocation, is familiar to us. It is repeated in family after Saskatchewan family, and has appeared over and over again in one form or another in our literature—a prairie version of paradise forever lost.

Although we whites have no mythical time, no time before time, in this province "the farm" is rapidly becoming that. Perhaps this is where the history of the Saskatchewan soul begins, and we are creating it every day in our Eden-like memories and in our "I remember when I was a kid on the farm/my grandfather's farm" stories, and in our desperate but so far losing struggle to hang onto the few family farms that are left.

Years ago an old man who had farmed and raised cattle all his life in Southwest Saskatchewan near where I live, when we were speculating about the future for people on the land around us, given financial disaster and rapid depopulation, remarked that he thought one day there would be people on every quarter section again as it had been during his childhood. I asked him how he thought this would come about. He had no answer, not conceiving of a mechanism that would produce this result, but when I asked, he looked not at me, but into the distance and repeated his remark. I never forgot what he'd said, because it seemed so clearly a visionary moment to me, beyond reason, beyond facts, and more than mere idle dreaming, even if he had no logic with which to defend it.

And I guess I was surprised by his belief, because he was a smart man, even a gifted one, if without formal education, and he had been young during the Depression, had seen the worst of bad times, the neighbours disappearing one by one, destitution, even starvation, and once or twice, insanity brought on by isolation and deprivation. But he remembered too, the days when there'd been neighbours on most quarters and he'd ridden his horse to schoolhouse dances crowded with friends, danced half the night, escorted a pretty woman home and returned to dance the other half, whose fondest memories were of the biggest event of the long winter, the schoolhouse Christmas Concerts, and the pleasure of the arrival of the men who "rode the grubline" into the ranchyard in the dead of winter, carrying all the gossip and news with them, and the mail, was even fond of the memories of the drunken sprees in the hotel beer parlour in the once bustling town that now consists of a post office and a failing store and nothing else but empty, falling-down shacks, and the time when, for a practical joke, somebody sawed the saddle horn off the saddle of an old cowboy who was drunk in the bar, and how they hid and laughed till they thought they'd die, watching the old fellow trying to get onto his horse, dead drunk, cursing, unable to comprehend why he couldn't get a purchase on that saddle so he could mount and go home.

The old man who saw that vision was a man who'd survived, even to a degree thrived, while neighbour after neighbour failed and then vanished forever; he was too smart not to know better than to think that all those vast acres around him would ever be peopled again, that the countryside would one day bustle with activity again. Because of his intelligence, his wisdom, and his wide and profound experience in the beautiful but barren Palliser Triangle, I've mulled over what he said for all these dozen and more years since, as things grew worse and worse and worse. What circumstances might bring his vision about? How might it happen? And why?

Ask the average rural person what she or he would like to see as the future of rural Saskatchewan, and the answer will sound like the old man's, and to most "experts," a fruitless dream of a return to the 1920s or 1940s: busy, well-peopled towns with lots of flourishing businesses, many small, but secure if not prosperous farms in the surrounding countryside, and a busy, full social life for everyone. At such a response, "experts" turn away in exasperation. "Get real," they say. "Grow up," and, "Get a vision."

And, indeed, a serious question is, if life on the farm were as wonderful as the Saskatchewan myth would have us believe, why did all those people leave? We know most of them left because they were "starved out" as they say in Southwest Saskatchewan. But if the myth of the marvels of farm life is alive anywhere, it's alive in the cities, it's alive among the descendants of those very people who were forced out, and it must have sprung up among them.

Until fairly recently farm life had serious drawbacks: the unrelenting, unbelievably hard physical labour; the continual poverty; the struggle to acquire amenities of living that urban people took for granted—all-weather roads, telephones, electricity and the labour-saving devices like washing machines that come with it; the lack of freedom in that with livestock it was impossible ever to leave the farm for more than 12 hours at a time, year after year, and there were no days off; the threadbareness of lives lived without food for the soul—without music or art or poetry or the theatre; the stifling of all dreams and ambitions that had nothing to do with farming; the omnipresent, eternal worry about money and the threat of foreclosure.

Ask a farmer and he will tell you that he wants to stay on the land because he likes the freedom but we all know that the freedom of which he speaks is largely illusory, and belongs to the bank and the markets, to the government, and to Mother Nature, and not to him.[1] His freedom exists only in smaller matters: whether he will seed this field or that field first, whether he will stay in bed till 7 or get up at 5, whether he'll take the afternoon off or not, or raise Herefords or Charolais, or seed canola or spring wheat. Admittedly, these aren't small matters in one's daily life.

Still, the myth, in the true sense of the word, of farm life as a kind of Eden continues to grow. There must have been then, there must be, something about farm life that explains the otherwise unexplainable and quite illogical fact of the last-ditch battle farm people will fight—despite the hardship of the life, and in the face of what is in material ways, the much better life in the city—to stay on their farms.

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1. I want to interject here a comment about my use of "he," as synonymous with "farmer." I use it instead of "he/she," because of the awkwardness of that form and my inability to think of a gender neutral form, and also because we all know that where there is a married couple farming, although the woman is also a farmer, she is in practice considered by everyone from salesmen to bankers to be subordinate to the man, and if a man is present in the household, he is taken to be, without question, the household head. Most farm women acquiesce in this whether it is a fiction or not.

The fact is, I believe, that there must be, in a life lived on the land, *something that is both beautiful and good*, and that something is in the end what is back of the determination of farm people to stay. That something is that farm and ranch life takes place in the midst of Nature, and farm people who have been rural for generations, or a lifetime, who have known no other life, view urban life as a kind of madness, as unnatural, deprived, as stunted and pitiful, and cities, as inexplicable, and cankers on the face of the earth. Whether they say so or not, for most rural people *life* translates as rural life. Anything else is not life at all.

This, at bottom, I believe, is the reason farmers and their families fight as hard as they do to stay on their land, and when at last they must go, those many who do not commit suicide or murder or go mad, spend all the rest of their lives as my parents, both dispossessed farmers, did, caught in that undertow of sorrow, dreaming all the rest of their lives of the farm.

But what is going on out here on the land is bigger than individual stories of heartbreak and loss. The crisis in Canadian agriculture is more importantly, a crisis in rural life, and the depopulation of rural areas should concern everybody in the country for reasons beyond the pain of individual loss and the economics of agriculture, beyond even a peoples' right to stay in their homes and to live on the land if they choose to.

At the simplest level is the fact that all of the values we cherish and that we consider to be the basis of our culture as a whole, and that provide for its continuity, but that are difficult to keep alive in cities, live on in the country: tightly knit extended families and communities, where the loss of any one member leaves a gap, but where deviance is tolerated and doesn't mean a life on the street, where interdependence is clear and co-operation thus a way of life, but without destroying self-reliance essential for survival in a sparsely populated countryside and in a harsh climate.

Country people understand how the world was built; it didn't appear whole and shiny the morning they were born; their fathers and mothers built it step by step each day. With only the most fragile and minimal of support systems, rural people have learned to do everything for themselves: to build roads and houses and machinery and to grow crops to feed thousands as well as their own families. Even more precisely, each individual farmer knows his acres of land intimately, knows the weather patterns over it, knows what grows best where and why, and he knows what the minute variations in the colour of his crop or the way it stands means and what he must do to rectify problems. And the rancher who's lived and ridden over a piece of prairie all his life knows the grass so intimately that no one else on earth can match his knowledge. No society can afford to wipe out the whole class of people in whom the practical knowledge laboriously passed down through generations remains alive.

And yet, excellent and undeniable as these reasons are for keeping people on the land, they are still not the best reasons.

We are threatened on all sides by the destruction of the natural world—the ozone layer, the greenhouse effect, acid rain, the deterioration and destruction of forests, grasslands, water and soils, the disappearance of species after species and the narrowing of gene pools. At the end of the twentieth century we see a place for ourselves on far-flung planets and in hurtling silently through space itself, yet we have lost our sense of our fit with the earth that bore us, fed us, and to which we will, all too soon, return. In strictly rural terms this has resulted in the rape of the land and concomitant loss of rural culture, demonstrating that as a species, we—the human race—have forgotten who we are and where we come from.

When I married Peter in 1976, the 5 miles between the turn-off at Claydon to the eastern border of the Butala ranch was almost entirely grassland on both sides of the road. Presumably, this was because, since most of it is saline, it was the least arable land each farmer owned. Since 1976 I've watched it plowed up and seeded to mostly spring wheat, till today I believe there's one maybe 50-acre field that's still in grass. On other roads driving the 40 miles southwest from the hay farm to the ranch I've seen windbreaks put in 50 years ago, and homestead buildings bulldozed and burned or buried till there's nothing left for miles but huge fields of stubble or summerfallow. Even most of the road allowances, the last refuge of wildlife, and native grass, and of the beauty of the landscape, are gone. Last July Peter and I drove by back roads from east of Eastend to Calgary and were simply dumbfounded to see—in the present climate of failing markets for wheat and the new ecological awareness—in not one or two, but several places, grassland that had just been broken that spring, and was being prepared to be seeded to cereal crops.

It seemed to me, with regard to the land around where I live, that it wasn't people who really needed the money who were breaking it so much as those who wanted more money, a lot of money—that's of course a judgement on my part which might be wrong—but old couples who'd been on the land a long time were never the worst offenders. It was as if they'd come out of a different ethic than many of the young couples who'd just taken over the family farm, as if they were satisfied with what they had, it being so much more than their parents had, and didn't even hanker for fancy clothes, cars, furniture, or holidays in faraway places. Nor could they stand to be beholden to the bank to any substantial degree.

But seeing the large-scale destruction of the landscape and the dying off of wildlife—even gophers virtually disappeared the last two summers, and we have very few jackrabbits left, not to mention the virtual disappearance of the burrowing owl and now the ferruginous hawk is threatened—I was appalled; I felt people had no right to do that, that the land belonged to all of us, that the beauty of landscape was no trivial matter, that in some deeply essential way the human race needed that beauty, even required it, and that deliberate destruction of it, till the countryside looked like a moonscape, was immoral, a downright sin. I thought then that the only solution to the damage of plowing up non-arable land, even alkali prairie—land that any fool could see wouldn't grow any but the thinnest covering of grass (which I was told was done for crop insurance) was to move all the farmers off that marginal land. Just empty the Palliser Triangle, where, incidentally, historically almost 60% of Canadian wheat has been grown, empty it and replace people with buffalo and antelope, allow some horse ranching, and in a few isolated places where there is better soil and rain falls more frequently, let the farmers stay. I imagined the land slowly recovering over generations, and in the meantime, we'd have this vast, beautiful countryside as a national park and wildlife refuge. But the old man's vision of a peopled land wouldn't go away. Then I thought that after all, people only overgrazed, plowed up marginal land, went into debt for the latest machinery and irrigation equipment because they thought they had to if they were going to survive. They only did these very destructive things, often, in a kind of collective hallucination of a better life, for the most part because they were worried about feeding their families, educating their children, making life easier for themselves and their families. I thought that surely if one looked each individual problem straight in the eye—high interest rates, outrageously expensive machinery, lack of land-use policies, and so on—that the problem of increasing farm size and concomitant depopulation causing failing towns, closing schools, elevators, branchlines and post offices—the death of rural culture—could be dealt with by governments in a direct way. I suggested in *The Fourth Archangel* that governments could legislate a limit to farm size, outlaw many if not all chemicals, nationalise some farm machinery companies and put a limit on their prices, and should rethink the whole export market business with an eye to individual self-sufficiency and to satisfying the domestic market only, and so on.

As well, the more I thought about it, the more sure I began to feel that to empty the land of people who'd lived there for two or three generations was downright immoral, that they'd earned the right to stay there, that sending them into the cities to do or die was an evil in itself.

From the Dominion Lands Act of 1870 (the equivalent in the United States was the Homestead Act), which was enacted not for the sake of settlers and their families, but to keep the Americans out of the "empty" Western lands, and to provide a market for Eastern businesses, to the present day, anybody examining farm policies around North America is appalled by the short-sighted, scattershot approach—the approach which takes into consideration last or not at all, those very families who have been keeping the nation in raw materials which feed them.

And also from the very beginning out here in the West, farms were established, not primarily with the goal of merely feeding one's own family, but with a view to growing substantially more than one needed in order to sell it and for the family then to live off the cash profits, not to merely be self-subsistent. Here was the root of today's problems. It was that Nature was defined as exploitable, as a resource, rather than as a good in itself.

In order to keep this system running, in the early 1990s Canadian governments paid from $3 to $5 billion annually in farm program payments. Now, as we all know that system is collapsing and GATT and NAFTA are removing or strictly controlling the payment of much smaller subsidies. I suggest that those billions of dollars should be pu toward reinventing agriculture, in Saskatchewan especially, not as agriculture as such but as rural life, or as a new kind of agriculture, the two, in my opinion, not by any means necessarily synonymous.

We are a part of Nature; we do not exist separately from her, although in our obsession with progress, in our infatuation with reproductive technology, with artificial intelligence in our constant denial of death, it seems increasingly that we've forgotten or are trying to erase this simple fact: it is that in rural life, in lives lived out on the land and in Nature we preserve the essence of what it is to be human.

Yet in discussions about the agricultural crisis and the family farm, I never hear anybody mentioning the undeniable, intrinsic human need for a connection with Nature. A the moment, it seems to me, that aside from self-subsistence, it's hard to know what the arguments are for preserving the family farm in the long term, that is, beyond this argument about the human species' need for a close connection to Nature. For the supremac of technology and the mind-set which goes with it (that we are above nature and must and can control her), is resulting in the rapid destruction of Nature.

But if Nature dies, we, the human species, die too. It is not a good thing for an author to admit that words fail her, but at this point, our need for at least a sizeable body of us to remain close to Nature, on the land all their lives, seems like something that ought to be self-evident, that is, self-evident to those of us who do live in Nature and know what she means, but that can't be fully explained to anybody who hasn't experienced it.

If we abandon farms and farmers, as we have known them for the last 10,000 years, we abandon our best hope for redefining ourselves as children of Nature and for reclaiming our lost souls, for what other sizeable body of people exists in North America with their knowledge? There is only Native people left who have been speaking to deaf ears since their conquest. We may at last be ready to listen to them, but the cultural differences—in particular, religion—make it difficult for many non-Natives to hear what Natives are saying. Increasingly we know in our hearts they are right, have been right all along, but we can't seem to find a way of implementing their knowledge, of blending it with our own beliefs into a workable salvation both for the land and for all of us as a species.

Nature doesn't reveal herself in a weekend or in two weeks, or even two months. It takes a lifetime lived on it; perhaps it takes generations lived on the same piece of land, under the same sky, to become part of it. It takes a long time of being out in it, without a narrow focus like specimen collecting or wilderness adventure, to feel at home in a landscape, to fit into its rhythm, to know what comes next before it comes, to know what is precious and rare and what is usual, to understand in a way beyond the mind, but with your body, how landscape works within itself and to feel how you are a part of it.

Even just being there won't entirely do it; you have to also approach the land in humility, in peace, in solitude, and in a meditative frame of mind, as farmers—those who are not mad for technology and who do not view the land as merely real estate—do. They have had time to come into an accord with Nature, to actually know Nature's ways, not narrowly, as scientists do, nor as merely beautiful, peaceful, good-smelling, musical to the ears, invigorating, visually moving, and so on, as most urban people know it, but in a deeper way.

I maintain that a good many older farm and ranch people who never, never speak of these things, who may not even be consciously aware that they know them, does remain a repository of a vital understanding about Nature. It has seeped into their bones and their blood and their very flesh. It is an understanding of such intimacy, depth and magnitude that it becomes a sense of the land as not parts—grass, sky, trees, animals—but as a living whole.

It is not out of obtuseness or stubbornness or arrogance that rural people have developed a verbal style and use of language different from urban people, but out of internalising distance, and weather and sky, out of keeping constant company with birth and death, with the great round of being.

In a larger sense the physical closeness to Nature is a closeness to the unseen forces that rule the universe; in the landscape there is always the unrelieved awareness of the edge of existence, of the mystery of being. Nature is thus the source of our spirituality and the bedrock of the sanity of our species.

There have always been people in every time and place who have understood that the land lives, is a presence, an entity in itself, and further, that humans are not separate from it. That it is, in fact, capable of making humankind into what we are naturally, but where our intellect constantly strives to pull us away from: spiritual beings; that this too is a function of Nature. Those who have lived on a place for long periods see it as more than trees, hills, stones, dirt and grass, and more even than the place such and such happened. Such people slowly develop a sense that the earth lives and has a soul and that its soul can and does commune with the human soul. It is this sense out of which *place* comes, and it is also the one out of which the myth of the farm as the idyllic way of life comes.

I also think to return to the vision of that old man of a populated countryside and a thriving society far from cities, that we should take those billions from subsidies which aren't going to be paid anymore and use them to put people back on quarters or half sections of land, not to grow wheat, except in the few places where it makes obvious sense, but to put the land back into native grass, to return to us our heritage of beauty, and to provide habitat for wildlife. This would take at least one generation and probably more in the Palliser Triangle. Farmers would still be farming, but instead of destroying nature, they'd be nurturing her. The program payments would go to pay salaries to these people to do this work, and the incentive and the bonus for them, would be that they'd be able to stay on the land, to live out their lives in the midst of nature. Towns would thrive again. And rural people being resourceful and smart as they tend to be, many of these families would figure out additional ways of making an income, including perhaps, agreements with urban families to provide their food supply.

The bonus for the nation would be, instead of a rise in the size of cities and thus of homeless people, increased poverty, increased crime and danger of city life, cities would contract and become more liveable. And we would have back the beauty and solace of the landscape, our true home, including a return of wildlife, which has rights of its own, which we've ignored, denied, or never even conceived of.

The history of the New World, as we all know all too well, has been one of unmitigated exploitation from the moment of the Spanish Conquest to the current tenure of the gigantic multinational food companies. Maybe, just maybe, this disastrous course is about to be altered at last; at this moment in the history of worldwide changes in our system of agricultural economics, marketing policies and of environmental awareness, we are finally ready to make the changes that on the large scale would make available the adequate food supply to those people who are starving, while allowing us to regain our essential, but disappearing, ties to Nature.

And maybe then the field of tiger lilies I saw as a child, that has been gone for such a long time and been replaced with unsaleable wheat, will return, and the Saskatchewan that is embedded in the souls of all our generation and people older than us, will return, bringing with it a return to a less materialistic and more sane way of life.

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Building Community as a Response to Globalization

Christopher Lind

Rural Dignity

I never knew my grandmother but I can easily imagine that she looked a lot like Barb Bonneau. Not a small woman. When I first saw her she was seated behind a table in the hallway outside a hotel conference room. She had warm grey hair curled close to her head and a gentle, inviting smile. Hanging on the wall behind her was a handmade quilt. She could have been tending the bake table at a church tea. Instead, she was distributing pamphlets on behalf of Rural Dignity—a populist protest and action group campaigning to save Canada's rural post offices. Barb's been the president since 1988.

The quilt was a protest banner made in folk-art style. The protests began in 1986 after the Tory government of Brian Mulroney began to close the rural post offices. The campaign was entitled "Coast to Coast for Rural Post." Barb was patient as she told me the story she's probably told a hundred times before. There are 5,200 rural post offices representing about 10,000 jobs. When the post offices are eliminated from small towns, the jobs are lost, the income is lost and the only federal building in town is closed. But that is not the end of the story. The other effects are more elusive but just as damaging.

When the post office is closed, rural residents are offered three choices: bad, worse and terrible. A postal counter will be established in a local store, a clump of "lock-boxes" will be built in town or residents can drive to the next nearest centre with postal service. (These forced choices remind me of the lay minister from southern Saskatchewan I met in 1989. She told me that in the last ten years her address had changed three times but she still had not moved!) When a small town only has two grocery stores, the location of a postal counter in one of them establishes a new level of harsh competition. Rural stores often carry customers on credit and they cannot afford to have their customer base eroded even further. Having served to divide the community along loyalty vs. convenience lines, the non-postal store will finally close—another service, income and employment opportunity gone.

If it were up to the communities, there would be open-ended discussion about how the rural postal service would be run. The community members would be consulted about hours and in some small locations people could volunteer their time to keep it open. Other government services (provincial and municipal as well as federal) would be encouraged to use the postal building. Barb was getting more and more animated as she pointed out that profit and loss were not the main issues in rural postal service. She described how the post office became a crown corporation in 1981 and that a commission headed by Senator Marchand (the ex-labour leader, Trudeau ally and wise man from the east) found rural service to be only marginally related to the profit-and-loss problem of the post office. The main business of the postal service now is not service at all but direct mail advertising. It seemed every move that Canada Post now made was a move away from rural Canada. How long before rural delivery routes would be privatized and how long after that would the deliveries become less frequent in order to become more profitable?

I knew about the loss of the postal subsidy to Canadian magazines but I had not stopped to think about the implications of these cuts for rural newspapers. Indeed, this is a far more significant cost increase for rural newspapers, most of whose subscribers would receive the newspaper by mail. Barb Bonneau's concern was the elimination of independent publications, which provide alternative and local points of view.

I thought I had a better understanding of the impact of rural post office closings but the recital had only just begun. Most rural post offices have photocopiers and they are typically the only public photocopiers in town. Most rural postmasters and postmistresses are also public notaries serving to witness legal documents and oaths. These ancillary services could have been expanded. The local buildings are not actually owned by Canada Post. They are owned by Canada Works. People are proud of these facilities and contrary to what Harvie Andre thinks, it means a lot to rural Canadians to have the Canadian flag flying in their town.

I interrupted the Rural Dignity president because I wanted to know more about the significance of the term "dignity" in the group's name. This had obviously been the topic of other conversations. There was a defensive edge in her voice.

"There's nothing dignified about being impoverished," she said. "There's no freedom to poverty. What we're doing is fighting for rural people to maintain their dignity. We want to let other people know there is great dignity in rural Canada." I was not about to argue with her. It had become clear to me that this group was protesting the series of indignities being inflicted on rural Canada from all sources. It could have been the railways that caught their venom. It happened to be the post office. In either case the federal government was being held to account for it.

From their point of view it was government policies that were causing a lot of the problems. "Government policies are making the market effects worse," she said. "They're implementing policies that break down the infrastructure." The feelings of abandonment and betrayal were thick in the space around us. The most fundamental assumptions about Canadian identity and Canadian history were now being questioned. "Are we being told that generations of people made the wrong choice to live in rural Canada?"

Barb Bonneau's quilt and the name of the organization, Rural Dignity, speak eloquently to the perspective and feelings of rural Canadians. People living outside the great metropolitan areas and involved in agriculture and other primary production experience broken relationships with their fellow citizens. Relationships of trust, cooperation, reciprocity and respect have been sundered. The dignity of their primary relationships as community has been assaulted. Their personhood has been violated.

Cooperation and community are moral categories used by farmers to explain their frustration. It is also one of the basepoints for their protest against the current crisis. Farmers experience a crisis in every form and level of their communities. At the most intimate level farm wives see their husbands being destroyed. "We're tired of seeing our husbands grow old before their time." At a social level they realize they need to re-establish older patterns of cooperation in order to survive. "We need to get together or we'll all be gone."

Globalization lies at the heart of the current crisis. It is not the only problem but it is the single most important factor that distinguishes this crisis from other farm crises. It is the change that unites the farm crisis with the fisheries crisis, with the manufacturing crisis, and with the jobs crisis. When a society is faced with a systematic change of this magnitude, some people want to bless the change and promote policies designed to accommodate shifts in the shifts in the structure. Others resist.

How is resistance possible? Some resist simply by trying to organize against change. I sympathize with this approach but I also think it is wrong-headed. It proposes only a negative direction. The most it will accomplish is to buy time. The more successful strategy is to build a base for a different future. The way to do that is by building community.

What is Community?

In the 1950s, one researcher undertook a review of different definitions of community. There were 94 different definitions analyzed. The greatest areas of agreement involved the possession of common ends, norms or means (Hillery, 1955). Many people, especially farmers, tend to associate community with place or geographic locale. In this sense, my community is the place from which I come. However, contemporary changes in transportation and communication have revealed the inadequacy of this criteria. In a stable population, people in a given locale have similar interests and needs relative to the larger population away from that place. The normal activities of daily living bring individuals into regular communication with one another so that common objectives can be achieved and conflicts resolved. Over time this creates a shared history and eventually a shared identity.

However, in an age of telecommunications where a population is mobile, it is possible for people to be living in different places and yet share and pursue common objectives through regular communication. They may belong to a community without sharing a place. It is the difference between belonging and residing.

The difference between belonging and residing has another parallel in the difference between being and belonging. One can belong to an association but real community is part of who you are.[1] It is part of your social being. This distinction was advanced in the 1920s by R.M. McIver who described community as "the common life of social being" (quoted by Roberts, 1979: 31). This is a more adequate approach for our purposes since it includes the sense of intimacy and identity found in the concept articulated by farmers. When farmers protest that their communities are at stake, they do not only mean the economic viability of the nearest town. They are also referring to the quality of relationship. Those relationships are becoming less equal, less free and less personal ("We can no longer work like slaves and work more and more for less and less"). There is less opportunity for sharing, caring, and mutual support ("We lash out at those nearest—our families").

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[1] Michael Sandel summed it up this way: "For them, community describes not just what they have as fellow citizens but also who they are, not the relationship they choose (as in voluntary association) but an attachment they discover, not merely an attribute but a constituent of their identity" (1982: 50).

Another reason we associate community with place is because we associate shared histories, identities and mutual support with pre-industrial culture. This image is especially strong in agricultural areas. In spite of the fact that modern farming would be almost unrecognizable to a nineteenth-century farmer, the immobility of farm land and the intergenerational employment patterns among farmers continue to provide the infrastructure, the material reality that is the pre-requisite for community, just as it was before the industrial revolution.

This dividing line was employed by the German sociologist Ferdinand Toennies in his book *Community and Society* (1957). In that book he was able to capture the spirit of the transition to industrial European culture by contrasting community (*gemeinschaft*) with society (*gesellschaft*). He described community as private and intimate, but also as exclusive and organic. It was closed to strangers and developed according to its own logic.

Society, on the other hand, he associated with modernity. It was the result of free association and contract. It was urban if not cosmopolitan, and very public. It was the product of rational will. The contrast between intimate relationships and public associations is very similar to McIver. Though Toennies was able to capture the nineteenth-century romantic longing for the past, clearly in the march of human progress community was to be supplanted by society. What he was unable to grasp was that community was capable of being realized intentionally, albeit indirectly. In that sense, what is missing from Toennies' definition is an understanding of freedom appropriate to persons.

As the philosopher John Macmurray, for whom the concept of community was central, I want to reserve the term community to describe personal relationships that involve history, identity, mutuality and fellowship. Following Toennies and MacIver, most of what passes for community in common parlance is really association or society. So, a community of teachers is more helpfully described as a society of teachers since the relationships are pragmatic, not personal. Even so, within the society a variety of communities may develop, all of which are comprised exclusively of teachers. As Macmurray put it, "Every community is then a society; but not every society is a community" (1961: 46).

In a more recent and more fully developed theory of community, Philip Selznick affirms the shift from location to quality of relationship but expands the list of characteristics that need to be present. "Any theory we propose must take into account the key values at stake in the construction and nurture of a community. These constitute a complex set of interacting variables: historicity, identity, mutuality, plurality, autonomy, participation, and integration" (1992: 361). For Selznick, community is a prima facie good thing. Like culture, friendship, socialization, family life, "communities provide settings within which people grow and flourish and within which subgroups are nourished and protected. This establishes a presumption of moral worth" (ibid.: 360).

Like Macmurray, Selznick sees community as a quality of relationship which is essential to full human personhood. It involves more than the reciprocity of shared interests. It involves a concern for the other we describe as mutuality. "As we move to association, and from association to community, mutuality reaches beyond exchange to create more enduring bonds of interdependence, caring, and commitment. There is a transition, we may say, from reciprocity to solidarity, and from there to fellowship" (ibid.).

In his inclusion of the distinction between association and community, Selznick goes beyond other writers in reserving a role for organizations. Indeed, as a process, Selznick describes a progression from organization to institution to community:

> A sense of institutional identity and an ideal of community are most likely to develop where values are more central than goals or at least are equally important, and where goals are multiplied in order to accommodate a broad range of interests. The formula "organization → institution → community" applies most clearly (but also variably) to schools, universities, hospitals, churches, professional associations, advocacy groups, political parties, and government agencies. The narrower and more instrumental the animating purpose, the more resistance there will be to thick institutionalization and the claims of community (ibid.: 237–38).

Selznick's understanding that community requires institutions will be important as we try and understand how community has been eroded and how it can be rebuilt.

How Has Globalization Eroded Community?

If we want to build community in the context of globalization, we need to understand the mechanism by which globalization erodes community. That mechanism will have to be reversed. Let us review the process of globalization.

In the first instance globalization refers to a concrete material change. It refers to the linking of national markets for financial capital to form one global capital market. The most dramatic changes occurred between 1971 and 1979. The process was made possible through the technological innovation of the microchip. The microchip made computers possible and computers made possible the instantaneous transfer of currency around the world.

This material change had the effect of shifting power away from political voices and social institutions and toward economic voices and market institutions. For example, in the 1960s, the Bank of Canada operated on the assumption that it controlled interest rates in Canada and exchange rates for the Canadian currency. Now, in the 1990s the Bank of Canada operates on the assumption that it does not control either but that it can speed up or slow down the rate of change. Though some may argue that the latter is the real truth and the former was always mistaken, it seems entirely possible that both statements could be true in their own time. When finance capital was moving within a market defined by specific political boundaries, it was possible for an institution within those boundaries to effectively regulate that market. When the boundaries of the market became massively larger than the boundaries of the nation, power shifted from the nation to the market. Instead of the Bank of Canada regulating the market, the market now regulated the Bank of Canada.

This power shift created a practical dilemma. The world environment was changing rapidly, before everyone really knew what was going on or what the implications were.

People were now operating on the basis of ideas that no longer corresponded to the material reality. The social structure was also reflective of and defended by these same ideas. What emerged was a battle of ideas. Some people are taking the material change as a positive occurrence. They seek to reform our social structure to harmonize with the new reality. They preach efficiency and competitiveness in the new global marketplace. By advocating these economic criteria be applied to social institutions like schools, hospitals and social welfare agencies, they are advocating the priority of the market over society, of economics over politics.

On the other hand, we also hear voices describing the new material reality as a negative development. These people seek to defend themselves against the losses, which result from diminished political control of economic activity. They seek to resist the unregulated expansion of transnational capital. Over against the efficiency of the market mechanism is placed the justice of democratic decision-making. This ideological struggle is waged over the conscience of society. What hangs in the balance is our attitude that conditions our action, which affects our ethics. It is an ideological struggle because it is a battle of ideas. It is a moral struggle because it is a dispute about what constitutes "good" social policy.

Insofar as the proponents of globalization have been successful, their approach has framed the public policy agenda. President Reagan and Prime Minister Mulroney were both proponents of globalization. Their agenda was known as a neo-conservative one because it endorsed the benefits of market-driven social change. Their legacy to us is the North American Free Trade Agreement (NAFTA). Neither President Clinton nor Prime Minister Chretien were known as neo-conservatives and both represent political parties opposed to the previous regimes. However, since the policies of both governments have been focussed on *restructuring* the state (government and its agencies) it is possible to see how both can be located *within the neo-conservative agenda, which seeks to bless globalization*. In the process of restructuring, market forces and market institutions are given moral and political priority. This means that services previously organized and delivered by government (like health care) are "privatized" (delivered by private agencies who bid on contracts in the market place). It also means that activities previously regulated by the state (barley marketing through the Canadian Wheat Board, for example) are thought to be better handled by the market. The moral priority of one approach is supplanted by the economic priority of the other.

What has just been described is a four-stage process. First there was a change in the material reality which produced a power shift. This power shift weakened key institutions resulting in a battle of ideas followed by a government-initiated restructuring of other institutions. In order to understand how this four-stage process destroys community we need to return to our discussion of community.

Macmurray argued that communities were different from associations because the latter were pragmatic and the former were personal. Selznick linked community with institutions and organizations. Essentially when people first come together (associate) they form organizations around shared interests. These organizations develop institutions if their needs are sustained over time. It is in the context of the ongoing life of institutions that people come to care about one another as persons and communities are born. For Selznick, institutions are central. "Institutions embody values and enhance integration, but they do so in ways that resist homogeneity and sustain differentiation. Strong communities are *institution centered*" (1992: 370). This persistent effort to distinguish community from association and yet describe their interrelationships has other implications as well. The "discussion of plurality and distinction between community and association is really a plea for the institutions of civil society and the distinction between community and society" (ibid.: 362–63).

What is Civil Society?

The study of society and community is a field dominated by sociologists and political scientists. The latter group of scholars uses a term that has become increasingly important in recent years. The term is civil society. Prior to the nineteenth century, this term *societas civilis* referred only to political society and therefore, the state (Bobbio, 1979: 26). The philosopher G.W.F. Hegel gave this term a new meaning.

As a result of Hegel's view many political theorists now distinguish "civil society" from "state," using the first to denote forms of association which are spontaneous, customary, and in general not dependent on law, and the second to denote the legal and political institutions which protect, endorse, and bring to completion the powerful but inarticulate forces of social union (Scruton, 1983: 66).

For Hegel, the term "civil society" replaced what other theorists referred to as "natural society" meaning that intermediate set of social relationships between the family and the state. In modern use it tends to include even family relationships.

Though Marxists tended to see civil society as another aspect of the state, it was a twentieth-century Italian Marxist, Antonio Gramsci, who rehabilitated the concept by returning to Hegel's understanding of it. Gramsci argued that civil society was not merely a reflection of the power of existing elites but rather an independent arena of ethical action (Bobbio, 1979: 31). Though operating within constraints, the clubs, associations, churches, schools, unions and other groups that constitute civil society were areas of authentic freedom. In order for fundamental changes to occur peacefully within a society, the leading element in society had to exercise leadership (hegemony) within the arena of civil society:

> Once the moment of civil society is considered as the moment in which the transition from necessity to freedom takes place, the ideologies, which have their historical roots in civil society, are no longer seen just as a posthumous justification of a power which has been formed historically by material conditions, but are seen as forces capable of creating a new history and of collaborating in the formation of a new power, rather than to justify a power which has already been established (ibid.: 36).

Gramsci's use of Hegel's concept was novel, but what he has argued is that there is another place in society where the struggle for social change takes place. It's not on the shop floor of Marx's revolutionary work place and it's not in the legislative assembly of John Locke's liberal state. It's in the regular meetings of everyone's local, voluntary organization—the place where community is formed. Ironically, the best illustration that Gramsci gave of what civil society looked like was the Christian church in the middle ages. In that period of time he understood the church to be "the hegemonic apparatus of the ruling group. For the latter did not have its own apparatus, i.e., did not have its own cultural and intellectual organisation, but regarded the universal, ecclesiastical organisation as being that" (quoted in Bobbio, 1979: 30).

How Can We Build Community?[2]

We have described community in personal rather than geographic terms, but relationships do not exist and are not created out of thin air. In political economy terms, they require a material reality. In theological terms they need to be incarnate. While they may include warm feelings they need to be made of flesh and blood. The most intimate form of community is a family. Not all families form community (some can be quite destructive) but when a group of biological strangers form community they are said to be like family to one another.

A community has a shared history and shared histories are created by common action. In common action, intentions are formed and fulfilled: visions are realized. A community has a shared identity. A shared identity is acquired through the articulation, adaptation and affirmation of shared moral values. These intentions, visions, and values are worked out in the context of other activities. If community is to be formed, people must be willing to cooperate for a common purpose. In the course of working out the purpose, community may be formed. Frank Kirkpatrick puts it this way:

> Cooperation may, in fact, prove to be a catalyst for the discovery of the joy of fellowship but it is not, in and of itself, a substitute for it. For example, workers may cooperate so closely in a common economic task that they begin to experience a commonality of interests. Out of that interest they might form a union whose primary objective is to secure the practical realization of their common economic concern. But derivatively, out of the union experience may eventually come the experience of delight simply in being together. Now this latter experience is not the original function of the union nor its primary purpose, but it may arise out of the conditions of association provided by its function (1986: 211).

If cooperation will not necessarily result in community it is certainly a precondition for it. In order for cooperation to occur there must be an actual pattern of activity, an action, a material reality to give it life:

> If the members of the mutual/personal community have as their overarching intention to enjoy fellowship with each other, then there must be material conditions which both prepare for the possibility of that intention and enable it to be carried out in practice. In other words, a mutual intentionality for community requires material conditions and infrastructures which are subordinate to but essential aspects of the full realization of that intentionality (ibid.: 206).

Globalization eroded community by changing the material reality that communities rely on as a framework for their common action. Communities that rely on the material reality of farm life, rely on borrowed money. The consequent power shift away from the nation state and towards global capital created benefits for transnational corporations and costs for national governments. It strengthened the power of an unregulated global capital market and weakened the power of financial institutions (like the Bank of Canada) accountable to democratic governments. There is currently a battle of ideas being waged in civil society. The ideas that are currently dominant trumpet the values of a transient, urban labour force which is newly competitive in a global market which has been freed from regulation by a much smaller government working within the constraints of balanced budgets. To the extent that these forces have had their effect, community has been further eroded by governments that restructure by eliminating or reducing the agencies or programs in which communities used to find shelter. As was indicated earlier, because community is not accidental it can be realized intentionally. The way to fight globalization is by intentionally building community. The way to build community is by reversing the process of erosion.

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[2] For other practical ideas on how to build community see the book of Nozick (1992).

As the process of globalization has been analyzed in these pages, the most recent attack on community has come from the restructuring efforts of our own governments. The appropriate response to a government of restructuring is a politics of resistance. The aim of this kind of political activity is to slow down or stop the erosion. Shelters from the storm of market forces have been built up slowly and painstakingly over many generations. They can be torn down with surprising speed. Some market-oriented governments liken themselves to medical practitioners with a necessary but unwelcome task. They can remove the bandage from the gaping wound slowly or quickly. They invariably choose the latter and congratulate themselves for it. More time is needed to facilitate the building of new and stronger shelters.

The politics of resistance goes hand in hand with a *struggle for the conscience of society*. This involves a redeployment of resources in the ethical arena of civil society. Globalization is a powerful concept because it draws its strength from a powerful reality. Ordinary people, farmers and other citizens do not feel empowered to resist globalization because it does not seem like something within their control. All of these people belong to organizations that could say no. The elevation of competitiveness as the only criteria by which society should be judged can only occur with the quiet assent of ordinary people meeting in town halls, church basements and coffee shops. This is where the ideology of competitiveness will receive its patriarchal blessing. In the humble act of dissent lies the power of democratic freedom.

The struggle for the conscience of society has two moments. In the first moment, ordinary people can reclaim their freedom by saying no to the ethics of globalization. In saying no to competitiveness they are also saying no to domination of their neighbour and refusing to be indifferent to the strangers in their midst. In the second moment they must say yes. They must say yes to their own history of cooperation for the common good. They must say yes to the challenges of solidarity with people who are suffering injustice and they must say yes to the call to compassion.

Just as it is not easy to claim one's own freedom, even when it has been there for the taking all the time, so it is not easy to stand in solidarity with strangers, foreigners, competitors and others with whom one is not yet in community. It is risky. It is dangerous. It requires faith in a common humanity. It requires the support of others. There is no step we can take short of doing it. For this reason we need to consider a strategy which is consistent with the goal. In the second moment we must be willing to form democratic coalitions across previous divisions for the sake of intentionally building community. They must be coalitions because we need new allies in this struggle and because we cannot be in solidarity without acting in solidarity. They must be democratic because only democratic organizations can foster the liberty and equality necessary for community.

The purpose of the democratic coalitions is to redesign or rebuild new institutions. The unregulated market is a powerful and potentially destructive force. By itself it is amoral. It has no conscience. If it were human we would say that it is sociopathic and incarcerate it as a danger to other humans. Instead we worship at its feet. Our existing institutions were built on the basis of certain assumptions, like the power of central banks to regulate exchange rates. Some of these institutions will need to be refashioned on the basis of revised assumptions. Some do not yet exists and will need to be invented. Others will need to be made responsive to the wishes of citizens. Globalization has produced its own new institutions like NAFTA. Given the power wielded by these institutions we should be shocked that they do not bare any of the hallmarks of representative democracy. These new and changed institutions will provide the material reality we require for the communities we intend to build.

The net effect of forming democratic coalitions for the purpose of building new institutions is to *extend democracy* to the economic sphere. Globalization has once more ripped economic forces from their imbeddedness in the political structure of nation states and inverted the relationship between politics and economics. To the extent that nation states are democratic, ordinary people now have less control over economic forces than they did before, and the market now has much more control over our politics than it ever did.

By democracy I do not mean a quadrennial exercise of casting one's ballot as a choice between competing choices. By democracy I mean the right of people to participate in decisions which affect them. Some of the most powerful decisions being made about our lives today are being made through the decentralized mechanism of a global market without any democratic reference to the people most affected by the outcomes. In order to achieve that reference we need to discover a new political and social framework in which we can re-imbed the global market. Only then will a democratic reference truly be possible.

The extension of democracy will be the last step in realizing the intention of building community. In order for community to be fully community, it must create not only a shared history and identity but also a quality of relationship we call mutuality. For a relationship to be mutual it must be freely entered into. There can be no coercion or force. Also for it to be mutual, one person must regard the other even as they regard themselves. They must regard them as an equal—one neither superior nor subordinate regardless of any differences in abilities or characteristics. This is what John Macmurray meant when he wrote: "Thus equality and freedom are constitutive of community; and the democratic slogan, 'Liberty, equality, fraternity,' is an adequate definition of community—of the self-realization of persons in relation" (1961: 158).

Not only is democracy central to the building of community but the building of community is also central to *strong* democratic theory. "Far from positing community a priori, strong democratic theory understands the creation of community as one of the chief tasks of political activity in the participatory mode. Far from positing historical identity as the condition of politics, it posits politics as the conditioner of given historical identities—as the means by which men are emancipated from determinative historical forces" (Barber, 1984: 133, as quoted in Selznick, 1992: 523–24).

So this is how community is built—intentionally, yet indirectly. The forces eroding community are slowed down or stopped altogether. The struggle for the conscience of society is engaged at the level of civil society where ordinary citizens have the opportunity to say no to the ideology of competitiveness and yes to the ethic of compassion and solidarity.

Democratic coalitions are formed in order to build and rebuild new institutions to serve the common good. In the end, the market is re-embedded and democracy is extended so that people have secure access to the power they need to participate in the decisions that affect them.

How Can We Build Community When We Are Losing Our Land?

Farmers in Saskatchewan have been losing their land at an unprecedented rate. There is no section of the province that is unaffected. As of January 1993 over 14,000 farmers in Saskatchewan alone had been through either a provincial or federal farm debt review process. This represents 23% of all farmers in the province and does not include a further 14,822 dependents affected by the farm debt review process. In at least four rural municipalities over 50% of the farmers have been through this process.

For people with a personal experience of this kind of community trauma, the possibility of forming democratic coalitions to build new institutions may seem too remote to be real. For that reason, I want to use the question of land tenure as a case study in building community.

I suggested that the first step in intentionally building community was to engage in the politics of resistance. In the context of farmers losing their land, that means *resisting the market-driven policies of elected officials or changing the governments*. In Saskatchewan in 1994, the most ideologically pro-market government in 60 years has already been defeated so it now means resisting the policies of a government confused about its current direction. In Alberta, the populace recently elected a determinedly pro-market government so the resistance there will need to be more electoral. Of course, there are many levels of government. Sometimes it is possible to use the resources of municipal governments to resist the policies of provincial or federal governments.

The politics of resistance can also be a way to mobilize people and to build the democratic coalitions necessary for the next stage. Elsewhere, I have reflected on the role of the churches in the farm crisis (Lind, 1992). Among other suggestions, I have recommended that members of congregations publicly declare their intention to ensure that no one has to go through the farm debt review process alone. This is not because Christians have any special expertise in farm land security legislation but because one of our greatest hurdles to overcome is our tendency to treat farm finance as a "private" matter between farmer and lender. If a church member accompanies a farmer to a meeting with the bank then just by being present and witnessing the proceedings they have made the affairs "public" and open to scrutiny. These are acts of solidarity that become the building blocks of the democratic coalitions we require. They make the business of food production everybody's business.

Not everybody who goes through the farm debt review process ends up losing their land but the largest percentage of cases end up with a "quit claim and lease back." That is, the farmer gives up title to the land and becomes a renter of that same land now owned by the financial institution. One of the consequences of this process over time is that the Farm Credit Corporation, a federal institution, has become the largest land owner in the province with over 1,000,000 acres of farm land. One of the goals of a democratic coalition might be *to ensure that this FCC land is not sold until other alternative arrangements have been explored*.

The forming of coalitions is part of the struggle for the conscience of society. The crisis in land ownership is a sign of massive market failure in agriculture. Parents cannot pass farm land on to the next generation and young farmers without farming parents cannot afford to borrow the money needed to buy a whole operation. In the midst of this failure of the marketplace, some people want to respond to the crisis by strengthening market mechanisms. It remains to be seen if this is everyone's desire.

Will we have a clear conscience about this new "clearance" of people from the land, or will we acknowledge our shame at this collective failure and struggle together to build something new? A coalition to stop the sale of F.C.C. land and explore alternatives can be one way to challenge everyone's conscience.

The third step in our intentional efforts to build community in response to globalization is to redesign and rebuild more appropriate institutions in which to have our social life. In this case it means *renovating or rebuilding alternatives to the land tenure institution.*

Such a proposal must face immediate scepticism. Farmers in Saskatchewan are fiercely attached to the private ownership of land. Perhaps it is because for many European families near the turn of the century, it was the first time their families had ever owned land. As one woman put it to me:

> I grew up on a farm. My parents were farmers. My grandparents were farmers. They were farmers in Ireland before they came over. Their parents were farmers and their parents were farmers and so on as far back as we can trace. When my grandparents homesteaded in Saskatchewan, they were the first generation to ever have title to their land. (Interviewed by the author.)

This is a powerful incentive and gives some indication of what is at stake in negotiating title to the home quarter. Of course, the liberation of a landless European class came at the price of the dispossession of the first nations of the area (Carter, 1990). Ironically, this is most important now because the settlement of some land claims in the province means new financial resources will be available for the purchase of farm land. Band councils with capital to invest in farming will become natural allies in attempts to build new institutions.

Another more recent experience is also cause for concern. In the 1970s the Saskatchewan government created a land bank. The purpose of the land bank was to facilitate the transfer of farm land between generations and to facilitate the entry into farming of a new generation without access to family holdings. This land would always belong to the land bank and would not need to be refinanced with each generation. The land bank stopped acquiring new land in 1984 under a new pro-market government. Opinion among farmers is still very divided about the merits of how the land bank was administered but it appears to have been successful in its specific goals.[3]

In light of that recent experience, a new proposal has been developed for a land trust. Following a model used in the United States to protect environmentally sensitive areas, this proposal involves establishing a corporation with a local board, which would raise capital through the sale of bonds. The farmer would have the exclusive right to farm the land

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[3] The Saskatchewan Land Bank has still not had the thorough study it deserves. One view that is widely held is that the land bank was too popular. When land became available, there were 30 applicants but only one could be successful. This had the effect of systematically generating opposition among unsuccessful applicants. See the article by Lynn Gidluck in this volume.

and to pass the land on to the next generation but title would be held by the trust and income paid to the bond holders (*see* Brown, Gray, and Molder, 1992). There have also been proposals circulating for a land co-operative arrangement (Bendel et al. 1992).

Each of these are examples of the creativity available in the province for the development of alternative institutions. They are also examples of the development of coalitions. The land trust proposal, for example, was sponsored by several churches, the credit union movement and Federated Co-operatives and the Saskatchewan Wheat Pool. I do not mean to express an opinion of one option over another at this point. I only mean that there are already several options available worthy of further development.

The last step in the framework of intentionally building community as a response to globalization is the extension of democracy. In the context of a struggle over land tenure this means forging links with other groups in other areas of the economy and other groups in other provinces to increase people's ability to participate in decisions which effect them. Our ancestors knew about this last step. They were not content with the establishment of the Canadian Wheat Board, local credit unions or local cooperatives. They also worked to establish an institution where the principles of cooperation could be studied and taught. Links were made with international agencies so the benefits of cooperation could be shared.

In this generation though, some of those institutions have been closed. Some co-ops present themselves as one more option in the marketplace rather than an alternative to market domination. The next generation is no longer being nurtured with the vision of a different future. Globalization is not a phenomenon unique to Saskatchewan or even to agriculture. All over the world people are being buffeted by exactly the same forces. They are being forced away from traditional activities toward market activities. Control is shifting away from communities and toward capital and markets. That is why the intentional building of communities is the appropriate response not only to the farm crisis in Saskatchewan but to the financial revolution called globalization.

The task of building community as a response to globalization is a task not only for us but for the whole world. Our allies are waiting.

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School, Knowledge and Skills in the Farm Community

Harry P. Diaz

Young people are essential for the processes that organise and disseminate knowledge within the farm community. They are the inheritors of practices, skills, and customs that have been relevant to the community for a long time and recipients of new forms of knowledge in institutions such as the high school. Thus, they have both the capacities to reproduce forms of understanding and practices and the potential to create new forms of knowledge.

This paper discusses the results of a survey carried out among high school students who live and attend school within a group of rural communities in Southern Saskatchewan. The survey was administered in the summer of 1991, as part of a larger research project. The main objective of this project is to develop an understanding of the complex relationship between farm labour processes and technology, with a special emphasis on processes related to acquisition and loss of skills by farmers. Thus, processes of knowledge within the rural community are a central focus of this project (for a detailed discussion of the conceptual framework of the project see the article of Stirling and Diaz in this volume).

The survey was designed to develop a better understanding of the role that young people play within the knowledge processes of a group of rural communities. The survey deals with the present labour dimension of the student's life—what they know and how they have learned it—and its future—what they want to learn and how they plan to use it. From this perspective, the survey seeks answers to simple, but important questions. Who are these inheritors? What are the dreams they have about their future? How do they want to attain these dreams? Does the rural community play a role in their future plans? What are the skills they already have and where did they learn them? To answer these questions we requested information on several aspects of the students' labour life: their future educational and employment plans, their links with the farm community, their skills, and the institutional settings in which these skills were acquired. These data have allowed us to develop a more comprehensive understanding of the processes of production and reproduction of farm skills, as well as a better comprehension of the structures of knowledge within the farm community. This article deals with some of the answers to the survey's questions. Its first section describes some of the basic characteristics of this group of young people and it presents the most relevant patterns with regard to the present and the future of the students' labour life and their working skills. The second section is more theoretical and it discusses some of the data patterns from the perspective of the relationships between education and community.

A Profile of the Respondents and their Responses

A total of 404 students were interviewed during the spring of 1991, which was the total population of students in grades 10, 11 and 12 in the secondary schools of Balgonie, Fort Qu'Appelle, Indian Head, Qu'Appelle, Odessa, Sedley, and Vibank on the days we visited those schools. These towns and villages are in an area that consists of four rural municipalities that lie in the region between five and sixty kilometres east of Regina. The area has a considerable range of variation in terms of its physical and geographic characteristics, soil types, farm types, and commodities produced, as well as a variation in farm structure and cultural patterns (for a detailed description of the area see Stirling and Diaz, 1990).

Gender and Social Background

Gender is a fundamental aspect of the organisation of everyday life. It plays a prominent role in the division of labour, opportunities, and life expectations of urban and rural people. We would also expect that processes of knowledge within a rural community would also have a significant gender dimension.

The survey indicates that gender is a dimension that cannot be ignored in terms of the more institutional processes of knowledge, such as schools. More than 55% of all the students interviewed are female. The proportion of females increases to almost 60% when only grade twelve students' responses are taken into consideration. As might be expected, there is some variation from one community to the next. For example, in Balgonie, Fort Qu'Appelle, Qu'Appelle, and Sedley the female population of the sample is approximately 60%. This compares to 46.7% in Indian Head and 100% and 85.7% in Odessa and Vibank respectively.

This pattern, where almost two thirds of the grade 12 students are female, becomes clearly relevant when compared with statistics for the provincial population between the ages of 15 and 19. The percentage of females for the Saskatchewan population aged 15-19 was only 48.9% in 1990 (Saskatchewan Health, 1990). This percentage decreases to 48% when the provincial data are restricted to the level of inhabitants of towns, villages and rural municipalities, settings that correspond to those used in our sample (Ibid.). A simple comparison between the provincial and survey data shows that the female presence in the last three grades of secondary school is seven percentual points higher than the average presence in the rural communities of women between the ages of 15 and 19. This high female presence in high school is obviously connected to a reduced male presence, which reaches only 40% in grade 12.

The differences between male and female participation become clearer when another

Table 1. Gender and Family Background of Grade 12 Students (N=150)

Gender	Family Background	
	Farm	Non-Farm
Male	35.2%	42.7%
Female	64.8%	57.3%
	100.0%	100.0%

characteristic of the students is taken into consideration: their social background. Students were asked to identify their families as either a farm or a non-farm family using the criterion of possession of farmland. Responses indicate that almost two-thirds of the respondents are from non-farm families. This proportion is not unusual: many families within rural communities are dependent on "non-farming" economic activities. As it is expected, this distribution changes according to the degree of urbanisation of the specific locality. For instance, among those localities formally defined as towns—Balgonie, Fort Qu'Appelle, Indian Head, and Qu'Appelle—at least two-thirds of the students are coming from non-farm families. Among those places defined as "villages" the percentage of respondents from non-farm families declines significantly. Thus, in Odessa the percentage is approximately half, while in Sedley it is 44% and in Vibank, 22%.

Table 1 shows an interesting pattern with regard to male participation in the high school when gender patterns are cross-tabulated with family background. Out of all grade 12 students coming from farm families, 65% are female, while the percentage of females from non-farm families is only 57%. These patterns are interesting because they not only show who is present in the picture but also the empty space left by those who are absent. In these terms, the strong presence of female students with a farm family background calls attention to the missing males from the farm families. Why are they not in the picture? It seems reasonable to assume, as we discuss it in the second section of this paper, that "dropping out" of the school seems to be a phenomenon that characterizes males from farm families.

The Students' Plans for the Future

All of the interviewed students indicate their intention to complete grade 12. Their plans after that, however, are more diverse. More than three-quarters of grade 12 students in our survey expressed a desire to attend either a university (52%) or a technical institute (27%) after finishing secondary school. To enter full-time employment is a choice for only 9% of the respondents, while the rest indicated a variety of alternatives, including joining the armed forces, travelling, attending a bible or private business college, and others.

These choices also display gender variation, as we can see in Table 2. The table shows the future plans for males and females at two different moments: 1991 and 1980. The 1991 data are based on our survey, while the information for 1980 was collected by the Saskatchewan Continuing Education Program (Saskatchewan Continuing Education Program, 1980) using a survey that covered all graduating grade 12 students in the province.

The 1991 data show that a large proportion of female students, 59%, plan to attend university, while attending a technical institute is a choice for 26% of them. In contrast, the percentage of female students who intend to obtain a job (7%) or to pursue other alternatives (8%) is low. The distribution of choices among men is somewhat different. Of the male respondents, 41% selected "university," while "technical institute" was a choice for almost 30% of them. The remaining respondents opted either for full-time employment

Table 2. Grade 12 Students' Plans Upon Completing High School by Gender

Plans	1991		1980	
	Males	Females	Males	Females
Attend a university	41.0%	58.9%	24.0%	22.1%
Attend a technical institute	29.5%	25.6%	17.6%	19.1%
Enter full-time employment	13.2%	6.7%	49.6%	43.7%
Other alternatives	16.3%	7.7%	8.5%	14.7%
Did not indicate	—	1.1%	0.3%	0.4%
	100.0%	100.0%	100.0%	100.0%

Source of data for 1980: Saskatchewan Continuing Education Program, 1980.

(13%) or for other alternatives (16%). Clearly, these responses indicate interesting differences between male and female respondents. Almost two-thirds of the women seem to find their future in university education; men, on the other hand, appear more inclined than women to construct their future in more "pragmatic areas," such as immediate jobs or skills that could be acquired in a technical institute.

Important differences exist between the results of our survey and the trends that emerged in the survey carried out by the Saskatchewan Continuing Education Program. In 1980, 50% of the male and 44% of the female respondents planned to move into full-employment after finishing high school, while attending a post-secondary learning institution (university or technical institute) was the choice for 41% of both males and females. Our survey, on the other hand, indicates a different distribution of the choices. To attend a post-secondary institution is the most important alternative for both males and females, while immediate employment has lost most of its attraction as a viable choice. There is no doubt that the differences between the respondents interviewed in the 1980 and 1991 surveys constitute an expression of different historical circumstances, where the factor is the radical transformation of the Saskatchewan countryside as a result of a decade of continuous rural crises and the uncertainties of the urban labour markets.

There are no important differences between students from farm and non-farm families regarding choices between continuing education and other alternatives such as employment. Students from both types of family indicate that obtaining a job immediately after high school and building their future around immediate employment is not an option. However differences emerge on specific choices with regard to the post-secondary educational institutions they would like to attend. Students from farm families indicate similar preference for technical institutes (35%) and universities (41%), compared with those who are from non-farm families, who clearly opt for the university (54%) over technical institutes (23%). Does this pattern express different attitudes within farm and non-farm families with regard to higher education? It is difficult to provide a definitive answer to this question without further research, but the pattern is rather suggestive of what Bourdieu (1984: 1) calls the possible relationships between "a social hierarchy of consumers" and "a socially recognised hierarchy of ... schools," a relationship in which the labour experiences of families are in tandem with different forms of education.

With regard to the location of post-secondary educational institutions where students would like to pursue their dreams, there are no significant differences in terms of gender or family background. More than three-quarters of the students are interested in attending post-secondary educational institutions in Saskatchewan. These institutions are two universities—the University of Saskatchewan in Saskatoon and the University of Regina in Regina—and the Saskatchewan Institute of Applied Sciences and Technology (SIAST), a technical institute, which has campuses in the main urban centres of the province. Those who indicated a preference for technical institutes were inclined to attend the programs in the SIAST campuses of Regina and Moose Jaw rather than those existing in the campuses of Saskatoon and Prince Albert, while two-thirds of those interested in attending universities expressed a preference for the University of Regina over the University of Saskatchewan.

There seems to be a tendency among the respondents to select post-secondary educational institutions that are closer to their communities. Those who prefer to attend the farther institutions, do so because of the unavailability of certain programs at either the University of Regina or at the SIAST campuses of Regina and Moose Jaw. This tendency seems to indicate that the students' preferences are made mostly in terms of specific programs rather than in terms of institutions. In other words, the fact that one or the other university is more or less well known does not seem to be relevant for the choice. It is also worth to note that the tendency to attend closer post-secondary institutions is stronger among both female students and those respondents with a farm family background.

Respondents were also asked their choices with regard to careers in each one of these postsecondary institutions. The most important choices for those who selected the University of Regina are administration, education, engineering, social work, and fine arts. A comparison of the 1980 and 1991 surveys indicates that with few exceptions there has been little variation in these choices during the decade. There is a minor decrease in interest for sciences and a small increase in the areas of social work and fine arts. Choices of programs for males and females show patterns that are not a surprise. Female students' interests are mostly in administration, education, and social work, while male students are interested in administration and engineering. The family background does not seem to affect their choices. The only exception is "administration," which attracts a large number of students from non-farm families.

Career choices regarding the University of Saskatchewan's programs are concentrated in engineering, as well as those programs unique to that university such as agriculture and veterinary science. Choices according to sex show minor differences: women are more inclined to select veterinary science and men are more inclined to select agriculture, a trend that also existed in the data for the 1980 survey. Finally, the distribution of choices according to family background shows a concentration of respondents from farm families in those programs related to agriculture.

For those respondents who selected SIAST there are differences in choices between the campuses of Regina, Moose Jaw, Saskatoon, and Prince Albert. In the Regina campus three programs attracted over one half of the respondents: EMT-paramedic, early child development, and legal secretary. The Moose Jaw campus attracted students interested in commercial and professional cooking, accounting clerk, and motor vehicle machine repairs. Most of the respondents, who expressed an interest in SIAST Saskatoon, chose

Table 3. Choices of Careers by Grade 12 Students by Gender and Family Background

Careers	Choices	Gender		Family Background	
	%	Males	Females	Farm	Non-Farm
Clerical	4.4	1.9	6.0	5.9	3.5
Business	12.4	9.4	14.3	7.8	15.1
Agriculture/Veterinary	7.3	10.3	4.8	13.8	3.5
Architecture/Engineering	5.8	11.3	2.4	2.0	8.1
Drafting & Design	2.2	—	3.6	—	3.5
Mechanics	4.4	11.3	—	5.9	3.5
Pharmacy/Medicine	2.9	3.8	2.4	2.0	3.5
Health related careers	9.5	7.5	10.7	9.8	9.3
Nursing	3.6	—	6.0	3.9	3.5
Fashion/Cosmetology	4.4	—	7.1	5.9	3.5
Computers	1.5	—	2.5	2.9	1.2
Social Sciences	2.2	1.9	2.4	3.9	1.2
Fine Arts/Humanities	4.3	5.7	3.6	5.9	3.5
Social Work & Related	7.3	3.8	9.6	11.8	4.7
Law	1.5	1.9	1.2	—	2.3
Education	7.3	1.9	10.7	7.8	7.0
Hotel/Recreation	2.2	3.8	1.2	2.0	2.3
Police/Armed Forces	2.2	1.9	2.4	2.0	2.3
Others	2.2	5.7	—	—	3.5
Unspecified	6.6	7.5	6.0	5.9	7.0
	100%	100%	100%	100%	100%
	N = 137	N=53	N=84	N=51	N=86

heavy equipment mechanics, while those who preferred the campus in Prince Albert favoured cosmetology. Choices among females are concentrated in programs such as accounting clerk, cosmetology, legal secretary, early childhood development, and EMT-paramedic. Males preferred commercial and professional cooking, and heavy equipment mechanics. There are no significant differences with regard to family background.

The survey also offered an open-ended question regarding choices of educational programs. Table 3 presents the choices of the respondents, as well as the distribution of choices by gender and family background. Responses to this question are not different than the responses to the question regarding choices of careers in the Saskatchewan post-secondary educational institutions. The preferred programs among all the respondents are in the areas of business, health-related careers (such as health technology, dental hygiene, or physical therapy), education, agriculture and veterinary, social work and related careers, architecture and engineering, clerical, mechanics, fashion and cosmetology, and fine arts and humanities. When sex is considered, males indicated strong preferences for careers in architecture and engineering, mechanics, agriculture and veterinary, business, and health-related careers. Women, on the other hand, opted for business and what have been called "traditional female careers," such as health-related careers, education, social work and social work-related careers, fashion and cosmetology, clerical and nursing. Typical careers, such as medicine and law, attracted similar proportions of males and females. It is also interesting to note that careers in areas of recent development, such as computers, attracted a relatively small number of respondents.

Among students from farm families the most important choices were agriculture and veterinary, followed by careers in the area of social work, health, education, mechanics, and business. On the other hand, students from non-farm families prefer architecture/engineering careers, and, similar to students from farm families, business, health, and education careers. It is important to notice the lack of interest of the students in what we could call "traditional liberal careers," such as law, medicine, and pharmacy, which are options for a very small number of students.

There was also a group of 23 students—mostly female and non-farm students—who expressed an interest in continuing their studies after their first degree or diploma. Some of them wanted to obtain a second diploma or a degree that may complement the first, such as obtaining a diploma in computer studies and then another in accounting. Several of the respondents, especially among those who opted initially for programs in the social and natural sciences, would like to increase their level of education by attending graduate programs.

Is the Rural Community a Part of the Students' Future?

Young people could play an important role in both the reproduction and creation of new forms of knowledge that could be relevant to the survival of the rural community. What is at stake, however, is the predisposition of the young person to continue as a member of the rural community and to contribute to its development. In these terms, the survey asked the students about the role that the community plays in their future dreams. Only 29% of the respondents included the community as an important element in their future life, indicating a willingness to return to their communities after obtaining a degree or a certificate. There is no doubt that this lack of interest in returning to the community shows not only young people's limited commitment to rural life, but also it is a good indicator of the process of disintegration of the farm community.

This willingness, however, was not distributed evenly along the whole sample. Returning to the community was mainly a choice for male students with a farm family background. The rest of the respondents—male students from non-farm families and females in general—seem to be more eager to distance themselves from their communities: in both cases three-quarters of the respondents responded in a negative way to the question related to the role of the community. This tendency clearly shows the limited capacity of the farm community to retain certain types of young people who could be essential to its survival.

The Students' Future Occupations

Most of the respondents had some clear choices regarding their future occupations after ending a post-secondary educational program. The most important occupational choices are in the areas of health and services, followed by jobs in the areas of sciences and engineering, social sciences, and teaching. In the area of health the specific occupations indicated by the respondents are those of chiropractor, nurse and physician. Within the area of services the most attractive occupations for the respondents are those related to police and armed forces, fire-fighters, chefs, cooks, hairdressers, travel attendants, and child care. With regard to the area of sciences and engineering the choice of the majority was engineer, followed by biologist and system analyst. Occupational choices within the area of the social sciences were lawyer, followed by social worker and psychologist. In the area of teaching most of the choices are for the occupation of high school teacher—approximately 50% opted for it—followed by primary school teaching, and by other teaching-related activities. The choice of farming was relatively insignificant, which is not a surprise since most of them see their future away from the farm community. This pattern of choices is undoubtedly disturbing from the perspective of the reproduction of the rural community since many of these occupations are designed to take place in urban settings.

Occupational choices among females are concentrated in the social sciences, teaching, health and medicine, and services. Males, on the other hand, opted for occupations in the areas of services and health, as well as science and engineering. A more detailed account of occupational choices by sex shows some interesting, although non-surprising, patterns which have already being described in many feminist works (*see*, for example, Armstrong, 1984; Armstrong and Armstrong, 1988). Health and medicine is an occupational area of attraction for both males and females. This area is very heterogeneous; it contains a variety of occupations with different degrees of social prestige. Traditional occupations, such as those of physician, veterinarian, and pharmacist are at the top of the hierarchy of prestige, followed by those of chiropractor, nurse, and physiotherapist. At the bottom we have occupations such as dental assistants and assistant nurses. The distribution of occupational choices according to sex indicates that men have a greater interest in those occupations with more prestige. For example, approximately half of them selected those traditional health professional occupations that are the top of the hierarchy of prestige as their choices, while only one male respondent opted for the bottom-level occupations. The occupational choices for women, on the other hand, are distributed among the three levels of occupations. One-half of them selected occupations classified into the middle levels, such as nursing and physiotherapy, while only one-third of them selected the more prestigious health occupations as their choices. With regard to service occupations—such as fire-fighters, armed forces, police and detectives, cooks and chefs, hairdressing, travel attendants, and childcare—there were also differences regarding the choices of males and females. The distribution by sex shows some expected patterns: men are concentrated within the first four areas, including fire-fighters, armed forces, police and detectives, which are traditionally perceived as "male occupations." Women, on the other hand, have expressed an interest in hairdressing, childcare and travel attendants. The only exception to these tendencies is three female students who would like to become police officers or detectives, and one woman who would like to become a non-commissioned officer with the armed forces.

The Students' Present Skills.

The survey was constructed to learn not only about the students' dreams and plans for the future, but also to produce information about the presence of the students in what it could be called the "structure of knowledge of the community." This structure is a network of institutions, contents, practices and actors that contribute to the reproduction and production of knowledge within the rural community. As indicated above, young people are central actors in this structure since they constitute both the raw material upon which generational reproduction of knowledge is carried on and, at the same time, they are the potential for the creation of new knowledge. The survey collected data with regard to the skills that the students have developed in the community and the settings in which they learned them. In other words, it generated information on the content and the institutions that characterise the structure of knowledge of the community.

The survey presented the student with a list of skills and asked the respondent to indicate those that he or she had, and the place or setting in which he or she had learned them. For the purposes of our discussion we could classify the different skills in three areas: first, those related to the household, such as gardening, housework, sewing, cooking, and childcare; second, those related to manual labour processes—or what could be called blue-collar skills and farming skills—such as animal care, crop production, the operation of machinery and vehicles, repair and maintenance of machinery and vehicles, assembling and installation, building, welding, the use of machine tools, the use of electric tools, and carpentry; and, third, those related to mental labour occupations, such as clerical, bookkeeping, art and computers. Table 4 shows the distribution of these skills among grade 12 students, as well as the places where they learned the skills. Learning places are traditional settings such as home, school, work, service groups (such as 4-H, Boy Scouts, Girl Guides, and others), community resources, and what we called the process of being "self-taught" or self-learning through books or magazines. Percentages in the "learning places" columns indicate the proportion of students who claim the place as the learning site for the skill.

The most common skills among the students are those related to the household, especially cooking and housework, which were chosen by 87% of the respondents. Also, over 60% of the respondents claimed to have skills in the area of computers, animal care, operation of machinery and/or vehicles. Other skills—such as welding, the operation of machine and electronic tools, and others— were less important although not insignificant since at least one-third of the students had them. Art skills are the less relevant, since only one-quarter of the respondents claimed to have them.

Students learned these skills in a variety of settings. Practically all the respondents—98% of them—learned at least one skill at home. School was the second learning place of importance, with approximately 91% of the students indicating this setting as the one in which they acquired one or more skills. Finally, 85% of the respondents indicated that "self-learning" was an important means to develop a variety of skills. Community services and resources played a less important role in the learning process. While community resources provided some type of skill development for 36% of the respondents, service clubs such as 4-H or Scouts were learning places for 28% of the students. Finally, work or training-in-the-job was selected by only 10% of the respondents.

Obviously, different learning places tend to specialise in the development of particular skills. As might be expected, home was an important learning place in relation to most of the household skills, such as gardening, housework, cooking, and childcare. Over 90% of the students who indicated having these particular skills selected "home" as the learning place. "Home" also played an important role in more formal occupational-related skills, such as "animal care," crop production, carpentry, the operation and repair of machinery and vehicles, construction, welding, and the use of machine and electronic tools. At least two-thirds of the students who have these skills learned them at home.

Table 4. Skills and Learning Places for Grade 12 Students

Skills	% Students who declared to have the skill	Learning Places					
		Self-Taught	Home	Service Groups	Community Resources	School	Work
Household Skills							
Gardening	76.8	36.2	96.6	6.0	0.9	7.8	0.9
Housework	87.4	39.4	45.5	7.6	0.8	15.9	1.5
Sewing	76.1	28.7	67.0	9.6	0.9	79.1	—
Cooking	87.4	59.8	90.2	10.6	1.5	69.7	3.0
Childcare	72.8	50.0	90.0	10.9	24.5	21.8	0.9
Farming & Manual Skills							
Animal Care	67.5	61.8	87.3	12.7	4.9	11.8	—
Crop Production	36.4	16.4	98.2	3.6	3.6	20.0	1.8
Carpentry	43.7	—	74.2	4.5	1.5	59.1	4.5
Operation of Machinery/ Vehicles	68.2	42.7	90.3	—	5.8	46.6	1.9
Repair/ Maintenance: Machinery/ Vehicles	44.4	55.2	89.6	—	3.0	20.9	1.5
Construction: Assembling/ Installation	46.3	54.3	68.6	1.4	1.4	31.4	5.7
Construction: Building	47.0	52.1	78.9	2.8	—	40.8	5.6
Welding	38.4	22.4	56.9	—	3.4	74.1	3.4
Use of Machine Tools	44.4	25.4	65.7	—	1.5	64.2	6.0
Use of Electronic Tools	32.4	42.9	81.6	—	2.0	53.1	4.1
Mental Skills							
Use of Computers	80.8	32.8	36.9	—	9.0	90.2	1.6
Clerical	39.7	25.0	40.0	1.7	8.3	78.3	1.7
Bookkeeping	49.0	29.7	48.6	1.4	10.8	73.0	1.4
Artistic	26.4	62.6	47.5	2.5	35.0	55.0	—

"Home" is especially significant in relation to crop production where the proportion is 98%, while it is less significant for business skills, such as clerical, accounting, and computers.

The school, on the other hand, is a learning place for computer-related skills. For example, 90% of those who have this skill learned it through school programs. Other skills learned at the school include cooking, carpentry, welding, the use of electronic and machine tools, clerical, bookkeeping, and artistic skills. With regard to these skills more than half of the respondents acquired them from the school. The school, on the other hand, played a less significant role in the formation of household skills with the exception of cooking and sewing, where at least two-thirds of the respondents who had these two skills learned them at the school. For those who reported to have specific farm-related skills, such as animal care and crop production, and for those able to repair and maintain vehicles or machinery, the school played a very minor role as a learning place. Most of the respondents acquired these particular skills either at home or through a process of self-learning.

Self-taught processes were important in animal care, cooking, childcare, repair and maintenance of vehicles and machinery, assembling and installation, construction and art. Over half of the people who reported having these skills learned them by themselves. With regard to the rest of the skills the processes of being self-taught are less important.

Service groups and community resources played, with a few exceptions, a very minor role as learning places. Services groups played a role in developing skills in the areas of animal care, cooking and childcare. Approximately 10% of the young people with these skills learned them from these groups. Community resources were important in childcare, art, and, to a lesser extent, bookkeeping. Service groups played no role with regard to areas such as computers, repair and operation of vehicles and machinery, welding, and the use of machine and electronic tools. Finally, the work place played a very minor role or no role, as in the case of the areas of animal care, sewing, and art, where no one recognised to have learned these skills as part of work activities. It should be kept in mind that the definition of learning places may affect this pattern, since "work" could be easily defined as "paid work" and different from "home" and "farm."

The distribution of these skills by sex shows some interesting trends. Females reported having skills in art, domestic activities such as sewing and childcare, clerical and bookkeeping. Males, on the other hand, indicated skills in crop production, operation of vehicles and/or machinery, carpentry, repair and maintenance of machinery and/or vehicles, assembling and installation, building, welding and the use of machine and electronic tools. The skills of males appear to be concentrated more in areas related to manual labour processes, while women seems to be stronger in skills related household or white-collar jobs.

In general, both males and females have a similar relationship to learning settings such as home, school, and self-learning. On the other hand, women profit more significantly from community resources and services groups than males, while the opposite is the case for work settings. However, when we take particular skills into consideration, the situation changes. Although, at the school, a public place, both genders equally participate in the areas of crop production, computers, clerical, and bookkeeping, at home the processes of learning become differentiated. For instance, at home, females compared to males have a lower participation in learning skills related to crop production and a higher participation in bookkeeping. On the other hand, at home both males and females equally learn skills in the areas of housework and cooking, but at school the interest of males seems to drop.

With regard to the family background of the students, there are no important differences with regard to housework, animal care, cooking, childcare and computer skills between students from farm and non-farm families. Students from farm families, however, report more skills in both manual- and mental-labour skills than their non-farm counterparts, with the exception of computer-related skills. When places of learning are considered there are no significant differences between the respondents from farm and non-farm families in regard to home, school, and the process of being self-taught. However, farm students report learning more skills from service groups and community resources.

Comments on Some of the Trends

A number of interesting insights about the relationships between educational institutions and the farm community in Saskatchewan stem from the discussion of the data patterns, insights that also offer some clues with regard to the dynamics of the rural crisis in Saskatchewan.

There is no doubt that learning processes make not only an important contribution to the preservation of the community but also they contribute to its consolidation and expansion. The presence of a learned population is a fundamental condition for the organisation and development of the community's human and material resources and, in the last instance, for the survival of the community in itself. As Sismondo argues, "knowledge translates into usefulness and usefulness into power" to move things (1996: 149). It is the existence of processes of knowledge that allow people to develop forms of control upon things, forms that allow them to establish some degree of agency in many areas of their lives. In this perspective we could move further and argue that a community where agency is alive and active is a vibrant community, while a community where agency is minimal is an inert entity.

Knowledge, in these terms, is not the monopoly of scientists but something that exists in different contexts and with different functions. The rural community has its types of knowledge that allow its members to carry out successfully both the specific and the general activities that characterise the everyday life of that community, such as dismantling a tractor or playing hockey. Moreover, knowledge does not exist as a thing. Rather, it should be understood as a process that allows for a continuous transformation of practices and skills. To this extent, the knowledge that exists within the rural community has the potential to be dynamic, to adapt itself to new conditions and to adapt the new conditions to the needs of the community.

What is at stake is the existence of the appropriate conditions for the development of knowledge, for its extension to all members of the community. The issue here is the existence of "an institutionality of knowledge" within the community, the presence of a network of institutions that is able to reproduce and produce forms of knowledge that are fundamental to the preservation of the community itself. In these terms, the processes of learning involve not only formal educational organisations such as the school, but also a myriad of other organisations such as service groups, community activities, local organisations, and even informal gatherings such as having coffee with your friends.

The information collected about the respondents' skills and the setting in which the respondents learned them tell us a couple of things about this institutionality of knowledge that exists within the rural communities covered by our survey. First, the school is only one of the institutions that are part of this institutionality. There are other institutions: some of them public such as service groups, work settings, and community organisations. Others, such as home, could be defined as private, while other settings are less institutionalised and, accordingly, open to a higher degree of agency, such as the process of being self-taught. All of these settings or institutions play a more or less important role in the reproduction and production of knowledge.

A second thing that we have learned from the collected information is that not all of the institutions within this structure have the same importance. Two institutions, "home" and the "school," were the most important settings for learning skills, while other institutions that are a more proper expression of the community as a collectivity—such as service groups— played a minor role.

This specific form of the institutionality of knowledge raises some interesting issues. Most of the reproduction and production of knowledge takes place in two polarities. On one pole, we have the school that is characterized by a process of formal rationality—a rationality that emerges from the fact that most of the contents and the form of the school are organised and imposed by institutions that exist beyond the community. This means that the forms of knowledge that are disseminated in the school are not only decided outside the community, according to a specific definition by the state of what must or must not be part of the processes of knowledge, but they are also very formalised in the sense that they are applied without distinctions among all the students. Households, on the other hand, do not follow a single rationality or logic in terms of what types of knowledge are the most important. The idiosyncrasy of each domestic unit assigns different values to distinct forms of knowledge and, accordingly, imposes its own common sense upon the definition of what is valid knowledge. For instance, the rationality that defines "money" as a fundamental value—predominant in many families—imposes a specific direction to processes of knowledge, a direction that does not follow the same path than the one in which "community" is the central value. This situation could be very problematic for some students, given that the rationalities that may predominate in their households could be in total contradiction with the one followed by the school.

The structure of knowledge of the farm community is not only characterized by the prevalence of some institutions in the production and reproduction of knowledge—with all the consequences that this could have for the well-being of the community— but also by the existence of centripetal and centrifugal forces that pull and push people in and out of the community. These forces are clearly expressed in two tendencies that were initially discussed in the previous section. The first one is the increasing female presence in the educational system and, second, the "drop out" phenomenon among males from farm families.

How could we assess the increasing female presence in the schools? The response to this question is not easy and direct. Any answer requires a discussion of the nature of the modern school, an issue that is in itself complex. It is argued that educational institutions play an important role in the development of society by transferring to the new generations the cultural heritage of the society and by fostering social and political integration through the socialisation of ideas. Moreover, the school is not only a channel for the socialisation of ideas but also a means for the dissemination of knowledge that it is essential to the life of the individual in a modern society. The development of a sophisticated language, the understanding of mathematical logic, a sense of history, the enjoyment of art, the comprehension of the natural world, are all elements that provide the person with a basis for his or her personal formation and social skills. It is hard to think about personal realisation in today's world without taking into consideration these elements.

At the same time, however, schools contribute to the preservation of the relations of power thorough their hidden curriculum. The everyday processes that take place in the school lead to the reproduction of discourses that could be not only uncritical and passive with regard to this unequal distribution of power but also supportive of it. Thus, by rewarding qualities such as punctuality, neatness, submissiveness, and tolerance for monotonous tasks, the schools become important agents of socialisation for preparing a disciplined labour force. More relevant to this article are the arguments that the educational system is characterised by a strong "urban bias," where schools reinforce the existing fascination with the urban sector and neglect the rural dimension of our society (*see* Lipton, 1977). If these criticisms are valid, schools are important channels that direct streams of people into the large reservoirs of the urban labour force, taking away from the rural community resources that are important to its development.

Moreover, it could also be argued that many educational activities are organised and implemented in terms of the learning practices of the urban middle class, practices that could be labelled as intellectual ways of learning—such as reading, writing, and the use of formal logic. These ways are not always related to other forms of learning, such as those that exist on a farm, where learning involves more practical procedures. Thus, the learning practices of the school may contradict those already socialised by the students in different social settings.

Within this framework, the increasing presence of women in the educational system could be characterised by positive and negative tendencies. On the one hand, they have to go through a process of socialisation that undoubtedly disciplines them and not always in a manner that it is positive for the farm community. On the other hand, they have access to a source of knowledge and skills that opens for them a larger world of possibilities for their future life.

What is relevant here, however, is that the discipline, knowledge and skills learned at the school provide them with the possibility to escape from a community that it is unable to offer them a viable and solid future. A large majority of the female respondents (85%) indicated their intentions to continue their education after high school in programs that are more relevant to urban life. Moreover, three-quarters of the female respondents indicated that the farm community was not an important part in their future lives. There is no doubt that within the community there are centrifugal forces—and the school seems to be one of them—that "expel certain types of individuals," forces that in the long term create serious obstacles for the reproduction of the community as a viable and desirable way of life.

The situation is more dramatic since these centrifugal forces operate in conjunction with centripetal forces that allow for the retention of other types of individuals. These forces clearly operate in the case of male students from farm families, many of whom decide to drop out of the school system. Martell makes an argument for working-class children that could well apply to our case. According to him, working-class children "resist the formal curriculum of the school ... they know this formal curriculum doesn't really get them anywhere. Its 'qualifications' are largely irrelevant for most of the jobs seriously open to them... The problem with this resistance is that kids being kids, they throw out the intellectual and creative baby with the bath water of what passes for intellectual and creative work in school" (1992: 278).

In these terms, dropping out of the school could be understood as a form of social action in which the individual reacts against the limitations of the educational system. In other words, it could be considered a strategy of resistance, an act of rebellion against an educational system that does not contribute in a direct manner to the daily practices of the student's life. However, forms of resistance can be either positive or negative, depending on the effects that the resistance has over the agent. In this case, the decision to leave the school is an ambivalent act; only the theoretical perspective from where the act is understood could define it either as a positive or a negative form of resistance. With regard to the preservation of the community this strategy of resistance is undoubtedly negative since it implies that the person will have no access to forms of knowledge that could contribute to his formation and social skills and, accordingly, to his active participation within the community. Moreover, given the increasing technologization of the farm production processes and the urbanisation of the rural society, the presence of a large number of farmer operators with a limited level of education could lead to a social disaster that could affect both farm production and the social integration of the rural community.

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Resistance to the Farm Crisis: Churches, Farm Groups and the Farm Stress Line[1]

Wendee Kubik

The words farming and stress have probably been joined together in sentences over the last three decades more than at any other time in history. Farming today is a complicated and stressful occupation. The illusions of a bucolic lifestyle are contravened by the uncertain reality of living and working on a farm in today's world of technology, globalisation, and agribusiness. Many different explanations have been put forward to explain the causes of the farming crisis and many solutions have been proposed to ameliorate it. What has emerged on the prairies over the last few years is a growing organised resistance by farmers and others who support them, to fight or change some of the many transformations that are occurring on the farm. This paper is a beginning documentation of some of the groups that were formed, their aims and purposes, and how they have helped farm families. It follows how various known groups responded to the farm crisis in a chronological yearly order beginning in the late 1980s and culminating in 1995. Also, interspersed throughout the article are statistical data reflecting the severity and consequences of some of the structural events that were occurring (e.g., foreclosures).

The Farm Crisis

The farm crisis occurred because of a combination of events simultaneously affecting farmers. Low and fluctuating commodity prices, increasing output costs, high interest rates and debt loads, changing market conditions and structures, and unstable global trade patterns were just some of the circumstances that farmers were coping with. In situations where negative "external" events predominate and have a profound effect on the individual person, people often blame themselves and develop feelings of failure. This was occurring to farmers in farming communities across the prairies, resulting in a marked increase in depression, suicides, family breakdown, alcoholism, and family violence (Walker and Walker, 1987). As people became aware that these occurrences were not isolated instances, but a pattern that was occurring in numerous farming communities, individuals, as well as groups, began to initiate ways to help. This was done in various ways, ranging from talking to each other, to organising meetings and conferences, to lobbying governments, and to holding rallies.

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The first indication that some kinds of action or programs were needed became apparent in the early 1980s. Provincial and federal governments began to establish agencies, or change the mandates of already established farmer-orientated agencies, to try to confront some of the financial problems farmers were facing. The Farm Land Security Board was set up in December 1984 for farmers in financial difficulty and in danger of losing their land. However, assistance was provided in the case of actions against the land only. This board reviewed the financial affairs of farmers, mediated between the farmer and the creditor, and when mediation failed, reported to the court on the farm's viability and efforts of the farmer to meet mortgage obligations.

In November 1985 a moratorium on foreclosures by the Farm Credit Corporation (FCC) came into effect. Although this did not write down or eliminate any debts, it did put a stop to farm foreclosures until the federal government lifted the moratorium on April 27, 1986. The Farm Credit Corporation was subsequently reorganised in May 1986 to provide financial services that helped farmers establish, develop, and maintain viable farm enterprises. The FCC made and administered farm loans under the Farm Credit Act and also offered counselling and assistance in the planning, organisation, and development of farm businesses. In a similar vein, in the summer of 1986 the Farm Debt Review Board was established to provide assistance under federal legislation in the case of actions against all assets of a farmer. They would review the financial affairs of farmers and mediate between the farmer and the creditor. Existing "safety nets" such as the federal Farm Debt Review boards and the Rural Transition Program would help ease farm families who were seen as "non-viable" out of farming.

During this same period (fall, 1986), a massive wheat harvest (a record 533 million tonnes) which exceeded commercial demand took place. Production increases occurred in several countries that were traditional wheat importers, leading to lower imports of wheat. The record harvest and an international subsidy war resulted in continued low prices for Canadian farmers.

The Resistance

A farm financial crisis committee established by the National Farmers Union (NFU) began at this time to actively assist families in economic and personal distress across the province. Wayne Katerynych, then chairman of the committee, completed twelve speaking engagements by the summer of 1986, bringing public and community attention to farm crisis issues. On March 26 and 27, 1986, the National Farmers Union invited eighteen farm finance committee people, guests, and resource people, to attend a day-and-half-long meeting in Saskatoon covering every aspect of the farm crisis. All agreed that the future for farming looked grim.

By 1987, the NFU had set up farm financial crisis committees in each province. Some of the committee's main functions were: raising public awareness about the crisis, assisting families by directing them to good lawyers and accountants, and giving emotional support when farmers felt intimidated by the banks and sometimes even their neighbours (who wanted to acquire more land). The committees also intended to apply pressure on financial institutions so that they would readjust debt obligations to a "realistic level," to organise non-violent farm gate defences if the bank refused to negotiate, and to press governments to implement more accommodating farm policies for farmers. The biggest task of the committees was to let farm families know the distress they were experiencing was not primarily their fault.

The Saskatchewan Wheat Pool also recognised the distress farm families were feeling. In 29 rural areas they began holding discussion groups and making presentations entitled "Managing stress in uncertain times." As well, the Pool began incorporating discussions on stress management as part of a session or component in many of their other meetings, gatherings, and conferences. The Wheat Pool distributed 2,500–3,000 free copies of *The Human Harvest* by James and Lilly Walker, a booklet about farm stress and ways to cope with it.

An illustration that shows how deeply the despair was being felt by farmers was reflected in a story in the *Edmonton Journal*, February 12, 1987, that reported Alberta provincial suicidologist Ron Dyck had found that the rate of farm suicides had tripled since 1981.

In November 1987, the Saskatchewan Catholic Bishops released a statement entitled "Farming, a vanishing way of life" in order to initiate the study of the issues facing farmers in communities all across the province. Throughout the winter of 1988 study sessions were held in parishes throughout Saskatchewan. A provincial agriculture co-ordinating committee was established with two representatives from each diocese to summarise the results of the study-group sessions and to make recommendations to the bishops. The outcome was to hire a provincial co-ordinator, which, in conjunction with the committee, would begin a rural life ministry in Saskatchewan. The ministry's goal would be to further investigate farm debt and what actions could be taken, as well as to stimulate discussion of alternative approaches to agriculture.

From January to April 1989, the Christian Farm Crisis Action Committee held meetings in local communities to make people aware of what was going on, to ask them to work together, and to help each other in stress and trouble. They wrote briefs to and had meetings with the government, as well as news releases for the press. Also, the organisation helped farmers in foreclosure steps.

On April 14, 1988, the NFU organised a "day of protest" to focus public attention on the human toll the farm crisis was taking on rural Canada. This was a high-profile tactic to offset a growing misconception that the farm crisis was over.

Meanwhile, the FCC indicated that farmland values declined nationally a further 7.7% between July 1, 1987, and July 1, 1988, compared with the 10.2% decline in 1987. During the four-year period 1984 to 1988, farmland values decreased 20–41% in the grain and oilseed growing areas of the Prairie provinces and British Columbia (Farm Credit Corporation, 1998).

In December 1988, the Catholic Bishops established an ad hoc committee to take action on the farm debt crisis. Due to the difficulties being faced by farmers, they recommended that the farm debt crisis be an area for immediate action. Efforts would be made to affect change through a write-down of debt or the imposing of some type of moratorium. They decided to work for a one-year moratorium on farm foreclosures on the complete debt (including accruing interest) so that there was time for restructuring to take place. The committee involved the churches, the Saskatchewan Association of Rural Municipalities (SARM), the Farm Equipment Dealers Association, Saskatchewan Women's Agricultural Network (SWAN), the NFU, the Saskatchewan Chamber of Commerce, and the Saskatchewan Council for International Co-operation. Letters soliciting support were sent to the Saskatchewan Teacher's Federation, Saskatchewan School Trustee's Association, Saskatchewan Wheat Pool, Saskatchewan Labour Federation, Saskatchewan MPs and MLAs, the attorney general, the lieutenant governor, and the federal and provincial agriculture ministers.

At this time the Lutheran, United, and Catholic churches each developed a submission to the government and jointly presented it. They protested against the social injustices occurring in rural society and the undesirability of various massive takeovers of smaller companies by multinational corporations.

In 1988 the Rural and Agricultural Action Co-operative Inc. was formed by a group of farmers to oppose indiscriminate farm foreclosures. Their purpose and goals were:

> 1. To facilitate a means by which rural farmers as a co-operative group can petition, lobby, and negotiate with government and all financial lending institutions on behalf of its membership.
>
> 2. To induce and promote a change in rural agricultural policy with regard to lending institutions and their present criteria.
>
> 3. To provide active and self-help support to its membership faced with farm foreclosure and the financial stress placed on family farms.
>
> 4. Provide education to members.

On January 23, 1989, the Christian Farm Crisis Action Committee presented a submission to Grant Devine, then premier and minister of agriculture, about a moratorium on farm foreclosures. They wanted the province to take action, and encourage the federal government to concur in assisting debt-ridden farmers with the following legislation: "That the federal and provincial governments immediately impose, for a minimum of one year, a moratorium on all farm foreclosures and accruing interest, to allow time to develop a satisfactory debt mediation policy and/or land tenure system that will protect farmers from losing their farms. Also, that farmers affected by the financial crisis, as well as other groups or individuals supportive to their cause, be given the opportunity to participate in the development of an acceptable debt mediation policy" (1989).

At an Interchurch Committee meeting held in Davidson on September 15, 1989, the main topic again was the issue of farm foreclosures and what to do about a moratorium. Participants stated that farm people were not only losing their land, they were also losing control of their lives. The Lutheran church sponsored three rural ministry workshops which concluded that farm pride was gone and that changes in federal and provincial governments, financial institutions, farm creditors and farmers themselves were necessary.

The participants felt there should be an emphasis on "no fault of farmers" regarding the farm crisis because some farmers were having difficulty admitting to themselves they were in financial difficulty. It was felt that many of the financial institutions brow-beat people into submission. As well, there was an overall belief that people in cities did not know what was happening in the farm sector.

A unanimous decision was made to prepare a preamble to the moratorium statement adopted by the United Church, and to seek the endorsement of the other committee members and that of the Anglican and Mennonite church groups. It was then decided to present this moratorium to the Ecumenical Conference of Bishops, which was to be held in Saskatoon.

At the Interchurch Committee meeting held in Davidson on November 8, 1989, there was a discussion centred on how to deal with the record number of foreclosures and the issue of the moratorium. It was suggested that approximately 5,500 foreclosures would occur in the next three years, not counting those that would give up voluntarily or just walk away from the farm. Farmers at the meeting believed that it was essential to involve people at the local community level to solve and mediate the crisis. It was argued they were most likely to get compassionate help if the problem was being dealt with at the local level rather than by the government.

The resolutions from this meeting were to be brought to the November 30, 1989, Interchurch Committee meeting in Saskatoon. It was resolved at the meeting that the churches immediately initiate a 'consultation' among all those concerned with the rural crisis, in order to form suitable responses. There was agreement that all parties were to come with attitudes consistent with a Christian, caring, and compassionate attitude and that these values would carry as much emphasis as that of profitability and efficiency. It was felt important that the churches give a spiritual dimension to what was happening.

On April 3, 1990, the Interchurch Committee on Agriculture again met. The discussion centred on various issues pertaining to the crisis. There was agreement that the clergy of the various churches must be brought together in order to bring them up to date on the seriousness of the agriculture crisis. The easiest way to accomplish this was by ecumenical groupings based on Wheat Pool regions and by having two people working together to set up the regions and communicating to the group. It was recommended that these meetings be called "Pastoral Response to the Rural Crisis." Five principles brought forth were:

> 1. Local Control. Many decisions affecting local community are being made thousands of miles away. They should be made as close to home as possible and there should be a reduction of corporate control over costs.
>
> 2. Security of Tenure. Land must be treated as a resource not a commodity and farmers must have the security to farm and be actively farming. There must be an exploration of different types of ownership options (i.e., long-term Crown leases, land co-ops, land banks, and rural development corporations). The use of crop-share rather than cash rental must also be encouraged.
>
> 3. Intergenerational Transfer. Farming requires a long apprenticeship thus there is a need for financial help in starting up, land transfer without debt, and retirement support (Saskatchewan Pension Plan).
>
> 4. Community Co-operation. There is a need for community co-operation. When

> farmers compete too much against each other they drive farm (land use) inputs up and farm gate prices down. Communities, as well as town and country, need to work together, replacing competition with co-operation.
>
> 5. Sustainability (Ecologically and Environmentally). There needs to be less emphasis on capital intensive projects, chemical dependency, cultivation, and monoculture. Importance needs to be placed on more research that is ecologically conscious, diversity, and a fair transportation system (Brassard, 1996).

Another group, the Davidson-Craik Farm and Town Self-help group was started in January 1990 when a number of local farmers who were concerned about the state of farming and agriculture met together. Although, five towns and six rural municipalities came to be served by the organisation, centred around Craik and Davidson, they felt they needed to organise provincially. They adopted as their mission statement: "Our vision is of a community in which all people ought to be able to live with dignity and in which it is recognised that all segments of the community are dependent upon each other and in which the family farm is recognised as a *way of life* worth preserving and enhancing" (1990: 1).

Some of their strategies involved: (1) educating people (all generations) to the "truth" of the situation; (2) getting together to help each other get the crop in and off; (3) not being afraid to define and talk about the problem; (4) shopping at home; and (5) stopping foreclosures, both farm and business. They defined one of their largest challenges as changing attitudes in the local community and they believed the churches must work together in order to meet these goals.

It was reported at their farm crisis meeting held August 26, 1990, in Domremy, that in the previous spring all the farmers in the area rallied together to see that all farmers got their crops seeded, whether they could afford to or not. There was clearly now a tremendous sense of community and togetherness in Davidson and Craik. Discussion at the meeting concentrated on keeping people on the land. It was thought that taking people off the land was morally wrong, and in order to have more people farming, farmers must have a guaranteed income. The group would like the return of a form of land bank in order to facilitate keeping farmers on the land.

Some of the discussions of the group focused on the open market system, as well as the necessity of working together with other groups such as organised labour. It was reported that 3,000 people made contact with the Christian Farm Crisis group during the winter of 1990.

An illustration of the frustrations felt by farmers took place in the fall of 1990. The Davidson-Craik Farm and Town Self-help Group erected a number of large signs along Highway 11. The signs included a variety of messages such as, "mail early while you still have a post office," "forget subsidies give us justice," "having farm neighbours is more important than having the neighbour's farm." The threat of legal action from the Department of Highways led to the removal of the signs. Frustration continued.

Farmers continued to hold rallies as they tried to gain a measure of control in their lives. The December 6, 1990, issue of the *Western Producer* contained a report of a farm rally held in Grayson with over 300 people and more than 23 organisations attending. It was a follow-up to the one held in Davidson in August and another rally was planned for March 22 and 23 in Gravelbourg, Saskatchewan.

As these events were occurring in the agricultural sector, the total Canadian farm debt as of December 31, 1990, was estimated to have been $23.98 billion—up 6% from $22.57 billion as of December 31, 1989. Farm debt increased in all provinces—from 2% in Newfoundland to 18% in Manitoba (Saskatchewan Agriculture & Food 1991). Concurrently, Canada's six major chartered banks pulled in record profits in the fiscal year 1991 as tumbling interest rates and resulting growth in operating margins countered mounting loan losses fuelled by the recession. According to the *Financial Post*, December 9, 1991, the combined net income for the Big Six banks was a record $3.7 billion in the year end October 31, a 4% increase from the $3.56 billion reported a year earlier.

In 1991, the Qu'Appelle Presbytery Rural Life Group printed a rural life tabloid and published it in the *Western Producer* (Special Issue). The intent was to explore the roots of the rural crisis including some historical analysis, as well to detail how the farm and food system was weighted in favour of corporate power and centralisation. They stated the goal was to call into question the values of the competitive mould and offer alternatives based on social justice and sustainability. The tabloid included articles on farm stress, a background to the crisis, trends in global food trade, the Canadian government's response to the farm crisis, the farm crisis and prairie environment, and a discussion of the values involved. It also offered some solutions and a list of resources available to help farmers.

The NFU Farm Crisis Committee continued being active in 1991. A farm crisis workshop held in Bruno focused on counselling farm families in financial crisis, the events in a foreclosure, and suggestions on farm gate defences. The NFU printed and distributed a farm crisis pamphlet, which included information on the personal and psychological affects of foreclosure on family members and information on what action to take in event of receiving a notice of foreclosure. Advertisements were placed in all the Saskatchewan weekly papers for two weeks with the name and phone number of committee members in case people needed help. As of May 1991, there had been two farm gate defences and a series of meetings with Allen Wilford (author of the book *Farm Gate Defence* (1984) and a farmer who had been foreclosed on). The purpose of the meetings was to raise money for a class action suit against the Farm Credit Corporation.

In the early part of 1991 the Saskatchewan Catholic Rural Life Committee presented a submission to the Grain Transport Agency, Transport Canada, and Agriculture Canada in reply to a discussion paper on western grain transportation. The Catholic Rural Life Committee had difficulty in understanding why the "efficiency study" had so narrow a focus since it seized on a theoretically cost-effective solution, but was seen to have felt no responsibility for the primary producers or the rural communities affected. It was thought to be imperative that the government takes into account the needs of the producers and the rural communities that serve them. The Committee stressed that producers must have a strong voice and not accept the concept of decision making being done thousands of miles from those most affected by those decisions. There was opposition to the concept of a surcharge on branchlines as this would result in a multi-level rate structure. The government report was criticised for making very little reference to short-line rail operations and for not recognising the efficiencies short lines have already brought to the system. The submission stated that funding to short lines was not fair or adequate. The Committee stated that they believed that all producers should have access to convenient and affordable services to market their produce.

The conclusion of the submission was that the process in developing a system for the movement of grain to export positions must involve the people most affected by those decisions. The success will depend, to a large degree, on the willingness of the federal government, the railways, and the grain companies *to share responsibilities* for decision making with producers, and municipal and provincial governments.

On October 24, 1991, the church leaders held a meeting with the Community Land Trust Research Project Team at the Agriculture Economics Branch, University of Saskatchewan. The main purpose was to meet with the project team, to obtain a better understanding of what was involved in community land trusts, and to let the team know that the churches were serious about examining the issue. Community land trusts revolve around economic, social, and land tenure issues; however, the two key issues regarding farming for the church leaders were affordability and security. It was stated at the meeting that the current financial crisis in agriculture determined specific issues such as land values and intergenerational transfer must be evaluated since 1982 land values had dropped between 35 and 40%. The team looked at four models:

(1) Deals with land held by financial institutions

(2) Land deals with beginning farmers

(3) Land deals with farmers wanting to stop farming

(4) Issues with stewardship of land (Brassard, 1996).

The Farm Debt Advisory Committee in March 1992 called for the establishment of a six-year leaseback program, the objective being to provide farm families with an opportunity to continue to farm their land. The intention was that the family would not continue to face the burden of debt, but would have a chance to rent land at a reasonable lease rate, and by the end of the lease period, to have an opportunity to repurchase the land out of the savings that the family accumulated throughout the six-year lease. During this time period federal agriculture minister Bill McKnight announced that there would be a two-year extension of the Farm Debt Review boards.

October 1992 marked the formation of the Farm Tenure Arbitration Board whose purpose was to implement the government's six-year leaseback program for farmers. The Board was established to assist farmers who had to transfer their land back to a lending institution in order to settle their debts. The board had the authority to require lenders to provide leases to farmers in cases where the farmer was unable to negotiate a lease with a lending institution.

The largest farm rally in the province's history (organised by the Saskatchewan Wheat Pool) was held at Saskplace in Saskatoon on January 26, 1993. It was estimated 13,000 farmers came together to demonstrate that there was a desperate need for government action to improve farm incomes. Farmers were asking the government for $2 billion to compensate for losses and anticipated shortfalls in 1992—much of which were attributed to the international grain trade war. The federal government offered $60 million but only on a cost-shared basis with the Province. The government said beyond that, there would be no more federal money before spring seeding. Farmers stated that they were not pleased with the changes made by the province to the Grip safety net plan and they were angry that federal agriculture minister Charlie Mayer was considering reducing the powers of the Canadian Wheat Board by taking away its monopoly on barley marketing. The farmers were angry at proposals to change the method of paying the $728 million Crow benefit. The protesters left the rally unsatisfied.

The Interchurch Agriculture Committee continued to be active in 1994. The committee reported on the farm situation (e.g., suicides, anger, and feelings of frustration) in various areas of Saskatchewan and stated parishes had been notified about the Farm Stress Line. Some of the activities and initiative focused on efforts to develop and promote land trusts and community-shared agriculture. Mention was made of the farm and town self-help groups and the need to make them more active. The interchurch committee lobbied the government on a variety of rural and social issues and held "listening meetings" for groups in rural congregations where individuals expressed their concerns about the loss of rail lines, disintegration of rural roads, community survival, the FCC, NAFTA, and GATT.

In 1995, The Interchurch Agricultural Committee began to focus on Community Based Land Trusts (CBLT) as one of the most viable ways to help preserve rural life. A pilot project was initiated to show the economic and practical viability of CBLT's.

The minister of Agriculture and Agri-Food Canada announced on April 12, 1995, that the Farm Debt Review Boards would be terminated as of March 31, 1996. A new, broader-based farm income review service will be developed to assist farmers to adapt more readily to new income opportunities, as well as to help those farmers who may experience financial difficulties related to either income or to debt-servicing ability.

As a way to aid struggling farm families, a concerted and co-operative effort by many concerned individuals and groups culminated in the formation of the Farm Stress Line in Saskatchewan in 1992. In the fall of 1991, the Department of Agriculture and Food in co-operation with the Family Foundation initiated the Farm Stress Management Program. This was in response to requests from farm organisations, community groups, and individuals that had been involved in crisis intervention work with farm families facing foreclosures. Groups and organisations such as the Christian Farm Crisis Action Committee, NFU, the Interchurch Committee on Agriculture, and various counselling agencies recognised the need to establish a support system for farm families in crisis, which to some extent replicated the services available to urban residents. The government formally responded to this concern on December 13, 1991, when the Cabinet gave approval to establishing the Farm Stress Unit. The toll-free Farm Stress Line commenced operation on February 10, 1992, and in the first year of operation received over 2,200 calls.

The main goals of the line were to provide individuals and families residing in rural areas with information, counselling, and referrals to existing government and community services. It was designed to address the perceived absence of Human Service options for rural residents of the province. The staff (who must be active farmers themselves) were trained to deal with a variety of crisis intervention issues, including stress management, farm financial management, relationship problems, suicide, child abuse, family violence, alcohol and drug abuse, and legal difficulties. The Farm Stress Unit also provides stress management and financial workshops, which makes the Line visible in the community, while at the same time providing necessary information to rural populations.

In December 1992, the Farm Stress Unit, with financial support from the Agricultural Institute of Management (AIMS) and the assistance of Agriculture Extension, hosted a televised workshop on farm stress called "Cultivating Hope in the Farming Community."

The program was broadcast through the Saskatchewan Educational Television Network (SCN) into 43 sites throughout the province, attracting 800 participants from an estimated 185 communities.

As this is being written, there are forecasts for one of the largest crops ever, if the farmers can "get it in the bin" without frost or bad weather. Flooding in a great deal of the province made seeding late, however there is always hope. The media and urban populations believe with a good crop the crisis will be over. What farm families are coping with in their everyday lives is, of course, greatly influenced by finances, but there is also massive structural change: globalisation of the economy, debt, health care concerns for rural communities, loss of population, transportation concerns—in short, a future for rural prairie communities. If rural communities are to be sustained, there must be ways to keep farmers farming, ways to enable new farmers to take up farming, and meaningful, relevant, proactive supports in place for farm operators—a way to deal with these problems, not just the symptoms of the problems.

What is striking about the farm crisis is the resistance of farmers. (The word "resistance" is being used both ways here: as fighting against and refusing to give in.) Farmers have held meetings; organised rallies; and talked to each other, governments, government institutions, banks, business and farm organisations. They have come together and proposed changes, as well as solutions, to keep family farming and communities alive, maintaining the tradition of collective co-operative community action that helped settle and sustain the prairies.

What is noticeably absent is the valuing and knowledge of the farm population. There appears to be a lack of recognition of the importance of farming as the world's population increases and demands more food. Many farm and business institutions focus on "bottom line" policies with little recognition of the "human side" of agriculture. The response of the government to the farm rallies gave the message that no support would be forthcoming as agriculture was a business like any other and these were the rules farmers had to live by. However, farming is not a "business like any other" and these actions did nothing to ameliorate the problems.

The effects of resistance and hope during the last two decades are hard to measure in concrete terms; however, in human terms had there not been this coming together of individuals, groups, and organisations, many more causalities would have occurred.

It is hoped that in some small way this article reflects and acknowledges the many ways farmers have come together to resist the human toll that the agricultural crisis has wrought. It provides a summation of some of the known groups and activities of how Saskatchewan farm people and others who shared their concerns were resisting the crisis in their lives. Doubtless there were many more individuals and groups who made a difference. The future of rural Saskatchewan continues to be in their hands.

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Farming in Saskatchewan in the 1990s: Stress and Coping

Wendee Kubik and Robert Moore

> *We produce one of the essentials of life—food—yet we can't make a living at it. My husband blames himself; this farm has been in his family for three generations and he feels he has broken the trust of his father and grandfather. He's becoming angrier and angrier and taking it out on us, but he won't talk about it. It's affecting our whole family and I don't know what to do about it (Interview, farm woman, January, 1996).*

The above illustration is just one example of how the distress associated with farming has manifested itself in the experience of one family in Saskatchewan. Stress is not new to farm families. They have always needed to cope with inclement weather, fluctuating commodity prices, debt loads, irregular and unpredictable income, and structural changes upon which they have little control over. However, the last two decades have ushered in such unprecedented economic and structural changes in farming and agriculture that significantly higher levels of stress are being reported (Saskatchewan Agriculture and Food, 1993; Ortega et al., 1994; Walker and Walker, 1988; Belyea and Lobao, 1990; Conger and Elder, 1994; Bultena et al., 1986; Albrecht et al., 1988; Kubik, 1996). Some physicians say that 80% of patient visits in rural Saskatchewan are due to stress-related illness (Gerrard, 1991). Owning and operating a farm now ranks in the upper 10% of high-stress occupations according to the United States National Institute of Occupational Safety and Health (Gordon, 1988).

In order to understand better what farm operators are experiencing, a transactional model of stress will be developed and then employed to structure a discussion of farm stress. The background of farming is examined along with some of the sources of farm stress, as well as what farm stress means for the farm families that experience it. A discussion of coping with farm stress follows along with a critical analysis of the material reviewed.

A Transactional Model of Stress

Definition of Stress

Since its origins in the eighteenth century, the concept of "stress" has been thought of in one of three ways: (1) the precipitating conditions in the physical and social environment ("the stressor"); (2) the characteristics of the individual ("the person"); and (3) the reactions of the person to the stressors ("distress" and "coping") (Aldwin, 1994; Houston, 1987; Meichenbaum, 1983). In the present discussion, an attempt is made to understand stress within a transactional frame of reference. Such a perspective reflects the need to integrate the social, psychological, and biological factors involved in stress (Cohen, Kressler, and Gordon, 1995). Stress is identified as the process that occurs when an individual, located within a specific socio-political-cultural-physical context, appraises the demands of their current circumstances as exceeding their capacity to cope effectively. Such perceptions result in a set of physiological, emotional, cognitive, and behavioural responses that may place the person at risk for physical disease and psychological disorder. The transactional model, which follows from such an interpretation, outlines stress as an event that arises from an ongoing, reciprocal interaction between the individual and their environment. It contends that stress resides neither in the situation nor in the person per se, but in the nature of the transaction between the individual and their circumstances (Meichenbaum, 1983). A brief discussion of the various aspects of the transactional model follows.

The Environment

In such a model the environment can be characterised in terms of demands and resources. People are constantly faced with the need to adjust to the everyday conditions of the political, social, economic, and physical circumstances in which they find themselves. Resources in important areas, such as medical care, finances, and relationships with family and friends, are also viewed as an integral part of the individual's ongoing life situation. An environmental event becomes a "stressor" when an individual appraises it as a demand that exceeds their capacity to cope effectively with the resources they have available (Moos and Schaefer, 1993).

Person Variables

Because people are different, a particular environmental event is not likely to evoke the same response in everyone. Person variables are viewed as influencing the meaning assigned to an event by an individual. They comprise the physical, psychological, and social/political/economic/cultural characteristics of the person. People differ in terms of their physiological reactivity to stressors, e.g., heart rate, blood pressure, and stress hormone secretion. Different personalities appear to handle stressful events in a variety of ways. For example, compare the "anxious reactive" personality (Girdano and Everly, 1979) who is believed to be hypersensitive to cognitive, visceral, and musculo-skeletal feedback

Table 1. Methods Involved in Preventive and Combative Coping Strategies

Preventive Methods	Combative Methods
1. Avoiding stressors through life adjustments	1. Monitoring stressors and symptoms
2. Adjusting demand levels to match resource limits	2. Marshalling resources
3. Altering stress-inducing behaviour patterns	3. Attacking stressors
	a. problem solving
	b. assertiveness
	c. desensitization
4. Developing coping resources	4. Tolerating stressors
a. physiological assets	cognitive restructuring
b. psychological assets	denial
self-efficacy	focussing on sensations triggered by the stressor
sense of control	5. Lowering arousal
self-esteem	relaxation
c. cognitive assets	disclosure
functional beliefs	catharsis
time-management skills	self-medication
competencies/skills	
d. social assets	
social support	
friendship skills	
e. financial assets	

Source: Adapted from Rice (1992).

mechanisms at work during the stress reaction with the "hardy personality" (Kobasa, 1979) who interprets stressful events as a challenge and not as a threat, is committed to purposeful activities, and possesses a sense of internal control over his/her actions. A pessimistic explanatory style, characterised by a tendency to attribute unpleasant events to unchanging, pervasive, personal characteristics such as lack of ability or experience, may lead people to be less likely to curb negative life events, leading to an increase in both the number and severity of such events (Peterson, Seligman, and Vaillant, 1988). Thoits (1995) and Moos and Schaefer (1993) identify aspects of the self-concept that function as resources in coping with environmental demands. Locus of control, self-efficacy, self-esteem, optimism and a sense of coherence are some of the personality variables that appear to influence the choice of coping strategies and their effectiveness in buffering the harmful outcomes of stressful events.

When an event is appraised as stressful, the individual implements coping strategies in response to the distress they experience. After an extensive review of the literature Matheny et al. (1986) defined coping as "any effort, healthy or unhealthy, conscious or unconscious, to prevent, eliminate, or weaken stressors, or to tolerate their effects in the least hurtful manner" (p. 509). They distinguish two types of coping strategies: (1) "preventive coping," which either stops demands from being perceived as stressors or increases resistance to the effects of stressors; and (2) "combative coping," which is directed at changing the stressor or one's relationship to it through problem solving or direct action. An elaboration of the various methods involved in each form of coping appears in Table 1. Thoits (1995) argues that the utilisation and effectiveness of either strategy will vary with the characteristics of the stressor (e.g., severity, controllability, chronic vs. acute) and the characteristics of the person (e.g., sex, social status, self-esteem, locus of control).

Finally, Pearlin (1989) has emphasised that the appraisal of events as stressful is shaped by the individual's role identity (e.g., gender, race, and social class) which may aid or constrain action. Different groups of people may well be particularly vulnerable or emotionally reactive to specific stressors (Thoits, 1995).

Stressors

Although there is no agreed upon typology for organising stressors, the following categorisation is a useful summary of the research (Aldwin, 1994; Matheny et al., 1986; Thoits, 1995). Life events are identified as sudden changes in an individual's life circumstances that require a relatively quick and major behavioural adjustment (e.g., birth, marriage, divorce, bereavement, property damage, physical injury, and loss of employment). The consequences of aversive physical environments—noise, pollution, overcrowding, inclement weather—have also been investigated. Other researchers have studied the effects of the chronic strains associated with the many roles an individual plays—parent, lover, employee, student, coach, member of a minority group, and so forth—which require constant adjustment over prolonged periods of time. Finally, the role of everyday hassles that require minor behavioural adjustments has been considered (e.g., impassable roads, equipment breakdown, and employee absence). The study of such stressors has also identified a number of dimensions that may intensify or weaken their affect on the individual. These include the frequency, duration, intensity, sequence, coincidence, configuration, predictability, and controllability of the stressful events (Aldwin, 1994; Thoits, 1995).

Cognitive Appraisal

Lazarus (1991) has emphasised that whether or not an event is viewed as a stressor depends upon how it is appraised by the individual. If a person assesses their resources to be equal to the demand, the event will likely be perceived as routine and benign, perhaps challenging if the demand taxes their response capability somewhat. If, however, resources fail to meet or exceed demands, such events are appraised as stressors and distress and coping will follow (Matheny et al., 1986).

Reactions to Stress

An individual's reaction to an event appraised as stressful involves a complex pattern of interacting emotional, physiological, cognitive, and behavioural responses that potentially have implications for the individual's physical and psychological well-being (Cohen et al., 1995; Matheny et al., 1986). Although there is no simple one-to-one relationship between the perception of an event as a stressor and the experience of a particular emotion, common emotional reactions to stress include negative feelings such as annoyance, anger, and rage; apprehension, anxiety, and fear; dejection, sadness, and grief; and shame and guilt. These negative emotional states, especially if they are chronic, may trigger neuroendocrinal and immune system reactions that may provoke physical and psychological symptoms. The affect of stressors on an individual's thought processes is reflected in narrowed attention, rigid thinking, and impaired judgement and memory. Behavioural symptoms include uneasiness, speech problems, sleep disturbances, and tremors. When distress occurs, it usually leads to the implementation of one or more of the individual's available coping strategies. The effectiveness of such strategies will depend, in part, on the nature of the stressor and the consequent level of distress experienced.

The experience of farming is now examined in light of this transactional model of stress. What are the stressors farmers are having to face and how are the men, women, and children coping?

Farm Stress

The Nature of Farming

The nature of farming is such that farmers have irregular and unpredictable incomes. Each year's income depends on the quantity, quality, and price of the crop planted or livestock produced. Many factors such as poor weather (lack of rain, hail, frost) or damage by pests and disease can intervene from the time the crop is planted to the time it is harvested to reduce its quality or destroy it completely. Added to these uncertainties are the fluctuations in commodity prices as determined by the competitive and volatile international markets. There is no guarantee from week to week of the price that the producer will receive for his/her produce and there is little they can do to control this. There is basically no consistency from year to year in farm income.

One particular characteristic of farm work is that it has no regular hours and at times it is difficult to predict how long or how much work is going to be involved in a particular task. Farm operators experience wide seasonal variations in work requirements, for example during seeding, harvest or calving, long hours are necessary to get the work done. The unpredictability of the weather means that farmers often have to try to accomplish their work without knowing what their time limit is. Poor weather could interfere or stop the work at anytime and lost time has consequences for the farm's finances. Farming is not a 9-to-5, or five-day-a-week job with a large measure of predictability in terms of day-to-day operations. Events like these where the demand on the farmer is unpredictable and that cannot be controlled are the ones most likely to produce distress.

Interlocking Nature of Home and Farm

The occupation of farming has characteristics that are distinctive because of the intertwining relationship of the home and farm. (Hennon and Marotz-Baden, 1987; Rosenblatt and Anderson, 1981; Gordon, 1988; Olson and Schellenberg, 1986; Pipke, Svenson and Driedger, 1987). Walker and Walker (1987c) state "Over half of the stressors being predictive of distress levels were situations specifically associated with farm life" (377).

Because most members of the farm family work on the common enterprise, each person's work may be necessary if the farm is to remain viable. On the family farm, work relations are also family relations. This mutual dependence makes it very difficult for the family to split up because a break-up would divide the farm's assets and jeopardise the economic future of the farm. Thus, a farm family experiencing high tension is less likely to break up than a non-farm family with similar tension (Rosenblatt and Anderson, 1981). The repercussions of this may involve discordant day-to-day relations or, if carried to extremes, spousal or child abuse. The difficulty of getting away for family vacations, isolation and lack of contact with other people can also create distress. Farm families live and work in the same environment, thus it is hard for them to escape their problems as other workers might be able to do when they leave their "work problems" at the plant or office and go home each night.

Given the interlocking nature of the home and the farm, the need to share resources can produce tensions. One person in the family may believe that resources should be spent on the farm operation, while another may want to allocate resources to the care of the household and its members. If resources are limited, conflict may be inevitable. "Expenditure decisions on the farm are a constant source of tension. Choices must be made between expenditures on personal and household needs and investment in the means of production for the enterprise. Household members are continually expected to make the necessary sacrifices" (Ghorayshi, 1989: 573).

Because of the nature of their work, farm families then have a myriad of stressors that they must cope with in their day-to-day lives. Families who work together must extend decision making into more areas than families who do not. These decisions could have more drastic consequences than for a family where familial and business roles are separate (Gordon, 1988:143).

Intergenerational Ties

Farm families often have two or more generations that operate the farm together. Farming involves making numerous decisions about expenditures, production, machinery, work allotment and such. When decision making is intertwined with family dynamics, issues of authority, control, lifestyle and communication may become involved. A younger generation reared in the 1960s and 1970s may choose a different lifestyle with different spending habits than their parents who may have been moulded by the 1930s. Younger farmers may espouse various new farming practices or promote expansion while older farmers may advocate more conservative methods. There may be resentment at being dependent on the older generation for financial support and work contributions. However, at the same time many younger farmers acknowledge that they could not keep farming without these contributions. Conflicts can arise over land transfer and inheritance, especially when other siblings may be involved. Weigel, Weigel, Blundall and Blundall (1987) state that the younger generation appears more vulnerable and at risk to stress, perceives less family support, and feels less satisfied in the two-generation farm family than does the older generation.

Off-farm Work

Distress can occur in the farm family when off-farm work is undertaken in order to maintain the viability of the farm and home. Off-farm income is increasing both in terms of its prevalence and in its financial importance. Since the early 1980s, the majority of income for Canadian farm households has come from off-farm sources. On average, in 1992 farm families received 32.6% of their income from farming operations while off-farm sources accounted for 67.4% (Statistics Canada, 1994a).

Although income from off-farm work helps to alleviate the distress related to farm finances, Walker and Walker (1987b) report that "off-farm employment was consistently associated with both higher stress and stress-related symptoms" (28). Their data suggest that off-farm employment places farmers and their families at greater risk for distress-related symptoms. Off-farm work brings changes to the farm operation and adjustments in family roles and relationships, all of which can lead to additional distress and strain on relationships.

For some farmers the necessity of having an off-farm job may reinforce their lack of success as a farm operator and family provider. Conflict may be generated because of competition between farm and off-farm work spheres and from not meeting personal standards regarding the farm operation (Keating, 1987). Off-farm work may also restrict family and community involvement, an additional potential source of stress for some families.

Some farm women who work in off-farm jobs experience conflict because they feel that they are not meeting the expectations of themselves or others (Keating, 1987). This "superwomen" syndrome is common in much "out of home" employment because women have dual roles as homemaker and worker. On the farm, this situation is compounded because of the addition of various farm stressors. "Women who held off-farm employment showed higher stress and symptom scores than women not working off the farm, and women who are involved in the farm business showed higher stress scores than those women not actively involved in the farm business" (Walker and Walker, 1987b: 32). The reasons for obtaining an off-farm job also have implications for the levels of distress experienced by farm women. Danes and Solheim (1993) found that a farm woman's satisfaction level decreased if she took an off-farm job for financial reasons more than for personal reasons. Off-farm work may create such a degree of distress for families that marriage or relationships may disintegrate and eventually dissolve. Thus, the strategy of obtaining off-farm work to keep the farm viable and intact may, in fact, have the opposite effect and threaten its very existence.

However, it needs to be recognised that off-farm work may also give farm women a separate identity from that of their husband's, provide economic benefits, and create a distance from farm tensions all of which can alleviate the distress generated by the stressors associated with the farm (Keating, Doherty and Munro, 1987). It is clear that how farm women interpret their roles and work does have an impact on the amount of distress they experience in their lives.

Foreclosure and the Threat of Foreclosure

Undoubtedly, one of the major causes of chronic distress for farm families is foreclosure or the threat of foreclosure. A farm foreclosure is more than just the loss of a business and income—it has a human dimension that is often overlooked when the numbers are studied. In some cases it involves loss of home, farm, way of life, old age security, community, and in many cases, the loss of an identity. It can also involve loss of face, hopes, self-esteem and loss of what other family members may have invested in the farm.

The farm may have been passed down from previous generations with the vision that it will be inherited by subsequent generations. Farming on the Canadian prairies is a relatively new phenomenon in terms of the region's history. Many farmers know the history of settlement on their farms and can trace the original homesteads back to their great-grandparents. Many times the ownership of the land has a story and thus ties to the land can be very deep and personal. When farmers lose their land, many feel they have failed the expectations of their ancestors and have lost the generational ties that go with it. The recriminations and guilt can be overwhelming.

One study found "that losing a farm was more difficult than a death, because there was not the same support and understanding for farm loss as for the loss of a person" (Graham, Henjum and Freeze, 1990). Grieving the loss of a farm can be a deep and long-lasting process. Given the uncertainty of farming, it is understandable why many farmers feel that foreclosure is the ultimate nightmare, even though they may not be personally threatened.

Farm Accidents

Farm technology has produced numerous innovations in the past few years. Elizabeth Gordon (1988) states that "With the advent of farm technology, farms have become hazardous places to live. Powerful machinery and pesticides continue to claim victims in agriculture" (143). Farming is responsible for an estimated 200 accidental deaths per year in Canada and has become Canada's most dangerous industry, as it was reported by the *Western Producer* (1992: 59). Canadian farmers are five times more likely to be killed as a result of an occupational accident than are workers in other industries. There are also more disabling injuries (58 out of every 1,000) as a result of farming than in other Canadian industries (Saskatchewan Agriculture and Food, 1994). Distress can result in a lack of concentration and carelessness, thereby making accidents more likely to occur. Coupled with working long hours, time pressures and lack of sleep during harvest or seeding, accidents are common.

The farm operator is an independent producer and thus does not have sick leave or pay. If the farmer is unable to work, it may be necessary to rely on friends and family or to hire someone to do the farm work, especially during the spring seeding or fall harvest. Farmers may also risk their health and well-being to save their investment, taking risks that would seldom be undertaken where labour is regulated by contracts. The additional distress of being located a long distance from medical help can exacerbate the stressfulness of any injury.

Population Decline

Population decline with its far-reaching effects is an ongoing source of stress for rural families and businesses. Over the last few years, the population of rural areas has been steadily declining. There were 401,500 people living on Prairie farms in 1991, 14% less than in 1981, and about 60% less than in the 1930s (Statistics Canada, 1994b). This declining population makes it very difficult for many small towns to maintain services, schools, health care facilities, and retain businesses. Better roads and vehicles and large service centres in metropolitan areas result in many farm people bypassing their local communities, which further erodes rural service centres and infrastructures.

Often, because of the low population base, there are few governmental and other programmes available in rural areas. Rural communities rely heavily on individuals and local community organisations for various community activities and needs. When farm families are "stretched" for time because of off-farm work, on-farm work, and families, it is difficult for them to contemplate more time commitments to community organisations. With the dwindling rural population and people's many time commitments, the loss of community programmes and recreational activities can be a potential loss of a source of support and the loss of a distress-reducing agent. Loss of services and programmes translates into reduced quality of life for many rural people.

Farm operators seeking off-farm work also may have to travel great distances in order to obtain work not available in their own communities, perhaps even obtaining winter work in another province thus separating the family for a large portion of time. If a family is involved, this means single parenting (generally for the women) and loss of a parent for the children.

What Farm Stress Means for Farm Women and Children?

Chronic stressors can have particular implications for farm women. Several studies have revealed that farm women experience higher psychological distress than farm men (Walker and Walker, 1987a, 1987b; Lorenz, et al., 1993; Slee, 1988; Kubik, 1996). Farm women, generally, have a myriad of responsibilities including looking after the household, family, garden and yard, as well as being involved in primary farming tasks, animal care and other aspects of the farm such as bookkeeping and "gofering" for machinery parts. Farm women who work in off-farm jobs are seen as working a triple load (Wiebe, 1989; Gallagher and Delworth, 1993). The Saskatchewan branch of the Women's Legal, Education and Action Fund (LEAF) conducted a survey on the legal, social and economic equality concerns of Saskatchewan farm women in 1988 (Davis, 1988). The study found, on average, farm women work a 96-hour week: 19 hours on farm work, 30 at household tasks, 26 in active child-care and 9 hours off-farm for wages (41% work off-farm). They also averaged 4 hours weekly as community volunteers. The enormous amount of time and energy involved in farm women's work and the multiple roles they handle can lead to work overload and distress.

In spite of the large amount of work that farm women contribute, there is a tendency to view their work as just part of the job of homemaker, resulting in lack of public recognition and value placed on their work (Delworth, Veach and Grohe, 1988; Smith, 1988; Keating, 1987; Keating, Doherty and Munro, 1987). Women's work in the household, on and off the farm, often makes the difference between a family's survival or its failure in farming (Elbert, 1987). This "invisibility" can heighten resentment, depression, physical symptomatology, anxiety, and become a major element in the distress experienced by farm women (Delworth et al., 1988).

Because of the way they have been socialised, women are generally the nurturers for the family. A woman working on the farm may be experiencing the same stressors as others in the family, but because she and others may view her role as the nurturer and comforter, she may feel that she must be there for others and disregard her own feelings. Many women have internalised these values and experience guilt and self-doubt if they do not live up to the expectations of themselves and others. This increased amount of distress has been attributed to the greater role conflict that women experience in contrast to men (Berkowitz and Perkins, 1984; McBride, 1990).

While numerous simultaneous roles can generate a great deal of distress for farm women, recent studies indicate that partner support can moderate the effects of role conflict. The greater the amount of support received from her partner for her work, the less likely a farm woman was to report distress-related health symptoms (Berkowitz and Perkins, 1984; Keating, 1987). In another study, Lorenz et al. (1993) found that feelings of control and competence were strongly affected by partner's emotional support. Low-stress women were much more likely to report emotional support than high-stress women, where this acknowledgement tended to be absent. Farm women are dependent for recognition upon those people who know about their farm work, notably their partners.

Farm stress also can have negative repercussions for children and adolescents. While children may not be aware of the causes of distress in their family, they are very attuned to the general atmosphere of relationships. When they sense something is the matter in their family and do not know the specific cause, they often blame themselves and may react by becoming depressed or exhibit behavioural problems.

Taking over the family farm may not be a viable option today for many farm adolescents and they may be actively discouraged from doing so by parents who want a less stressful and more financially secure occupation for their children. Many families find it difficult financially to send their children to university and a scarce job market (especially in rural areas) adds more to the distress experienced by young adults hoping to find jobs.

Coping With Farm Stress

Farmers and members of their families have employed many of the coping strategies presented in Table 1 in dealing with their distress. However, it is necessary to place their reactions in the context of the stressors they face and the ways in which these stressors make demands upon them. Farmers often have difficulty reaching out to others for social support because of the individual nature of their work and because of the isolation of rural areas. As a result, denial of problems is a common strategy in dealing with the stress associated with farming (Kubik, 1996).

Withdrawal and isolation are also ways of coping with stress. If feelings of hopelessness and depression become severe enough, suicide can be seen as a solution out of a difficult and hopeless situation. In farm and ranch families, men are 1.5 to 2 times more likely to commit suicide than other groups of men in different occupations (Gunderson et al., 1993). The Canadian Coalition for Agricultural Safety and Rural Health has stated that the suicide rate for farmers is more than double that of the general population (*Globe and Mail*, 1994). Art Macklin, past president of the National Farmers Union, has stated, "Since 1985, over 63,000 or one quarter of Canada's individual and family farms have become casualties and are no longer in existence. During those years, there were 485 documented suicides in rural Saskatchewan" (Western Producer, 1993: 6). Farm suicide numbers are difficult to verify because many times the suicide or the attempt at suicide is made to look like an accident. One reason for this is insurance is not paid to remaining family members if the cause of death is found to be a suicide. Often, if there is any ambiguity in the cause of death, coroners are reluctant to state it is a suicide because of the stigma then attached to the family. Its real incidence may be much higher than has been reported.

Farm families' ongoing life situation is one where a large majority of the pressures come from the economic, social, political, cultural and physical way of life of farming. We can not look at farm stress as an individual problem that has no relationship to the outside forces because if we do this, stress tends to become internalised and people blame themselves for their situation. When this occurs helplessness and powerlessness can exacerbate the situation further. Chris Lind (1995) proposes the strategy to cope with the powerlessness that globalisation induces is to build a base for a different future through the building of community.

The Need for a Transactional Model That Incorporates the Individual and the Environment

An approach taking into consideration both the personal and the social, cultural, economic and political realities that farmers are currently confronting is lacking in the study of farm stress.

Farming is a complex business, and in order to have a successful year farmers have to constantly adjust to the many uncertain components—weather, input costs, prices for commodities, and so forth—all of which have to "come together" for the enterprise to be successful. A "poor crop" can lead to self-blame, feelings of personal failure, and guilt for not meeting self-defined criteria for success. Over the last few years a large numbers of farmers have been forced to leave agriculture[1] because they can not make a living, in spite of working longer and harder and reducing costs. This tells us that the individual farmer cannot always be blamed for his or her predicament. Simplistic explanations such as poor management or lack of hard work are clearly not valid explanations for the farm crisis. Nevertheless, many farmers do take the blame upon themselves, internalising and individualising their problems and blaming themselves for "their" failure. An additional consideration is that the "failure" is not something to be talked about. Personalising and internalising the responsibility for the structural and economic problems that plague farming today and not talking to others about it leads many farmers to believe that they are the only ones facing these difficulties. When this happens people tend to withdraw from others, feel "stressed" out and can become vulnerable to a whole range of different personal, physiological and psychological problems, suicide or even violence.

When farmers are distressed they may not understand what is happening to them. At times they may feel they are "going crazy". The complex of physical, emotional, cognitive, and behavioural reactions that farm families are experiencing should not be labelled as "abnormal" but considered as "normal" reactions to a stressful situation. Saying this, however, is not in any way to minimise the anguish and misery that farm people experience. In addition to these personal costs, there are also social and economic costs for the individual and society as a whole. The well-being of some rural and urban regions is linked to the economic and social health of the farm sector because agriculture is a major contributor to their economies. In the study of farm stress one cannot separate the human dimension from the economic dimension because of the nature of the relationship between the family and their farm and between the farmer and the society as a whole. One affects the other.

Because of the economic situation in farming, banks, multinational companies, and governmental institutions have emphasised that the responsibility must be on the individual farmer to change his or her farming practices and methods. Farmers are told they must become "more efficient producers" if they want to stay in farming. This is seen as the solution to the farm crisis (Blow, 1990). Family farms tend to be very efficient agricultural producers because of self-exploitation and personal sacrifices made by the farm families. Their efficiency is also apparent in our low food prices. Telling farmers that they must become more efficient (acquire new technology, learn new farming practices, expand, etc.) in order to survive in farming puts the onus on the individual farmer to change his or her own operation and accept the blame if they continue to face difficulties. It is important to note that institutions and companies that interact with farmers are not being told to change or adjust their structures or operations. Farmers are feeling increased distress caused by the growing demand for management skills and adjustments they are told they need to make in order for them to continue to farm (Kubik, 1996).

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[1] The number of census farms enumerated in Saskatchewan in 1991 was 60,840, a 4% decrease since 1986 and a 21% decrease since 1971 (Agricultural Profile of Saskatchewan—Part 1 and 2, Statistics Canada Cat. 95-370 and 95-371, 1992a). The number of census farms in Canada in 1991 was 280,043, a 24% decrease since 1971 (Agricultural Profile of Canada—Part 2. Statistics Canada, cat. 93-351, 1992b).

However, farmers can be good managers and still not be successful because of the larger structural constraints that they face. Economically and socially, farmers have been the ones to bear the costs for the structural adjustments of farming. Chris Lind (1995) states, "The dominant culture would have us believe that ethics and economics do not, should not, and cannot mix. As a result, many people believe that farm bankruptcy can only be 'blamed' on the individual farmer for their failure to 'compete'" (70).

We have to question the ways in which farming is commonly viewed and analysed. The focus has been mainly on conventional economic aspects without looking at the social costs that are accrued by the farm family. Focusing on the business side of farming is important because no one wants to lose money or their farm; however, economics must also be interpreted in human terms. Over the last few years with the focus on deficit reduction by governments there has been a polarisation toward economic solutions as the only solutions. The "bottom line" approach is not always the best mechanism to govern human behaviour. If we lose farm families, we lose agriculture and, if we don't have agriculture, we don't have quality food. The market forces that have such an influence on farming have largely focused on only "bottom line" economics with no consideration of the human consequences. At times the "laws" governing mainstream economics may seem immutable; however their basis is human creation and democratic processes can enable changes to occur that take into consideration human health and happiness.

In order to cope with the distress they experience, many farm families seek help from counselling and stress management programmes. This is a positive direction because it represents an acknowledgement of the crisis and a reaching out for help, one way to combat distress. However, many of these programmes often tend to focus on only a narrow dimension of the causes and manifestations of distress. The focus is on the individual psychological characteristics of the person, and coping with stressors is made into an individual adjustment problem. Nikki Gerrard (1992), the community psychologist to the farm stress line in Saskatchewan, states, "In our individualistic society, we are taught to believe that we are totally unique, that our problems are distinctly different from others', and that there is a scarcity economy of help" (42). For example, financial concerns are the leading cause of farm stress (Walker and Walker, 1987a) but with the emphasis on individual coping the attention is placed on the need for the farmer to overcome stress by focusing on personal factors that they supposedly can control, i.e., "change perceptions about their personal situation and look for the positive in the negative". If farmers cannot change their appraisal of the situation or deal effectively with their distress, this further exacerbates the distress and reinforces the feelings of failure, i.e.; it's hard to feel good about losing your money and your farm. It cannot be emphasised enough that the distress related to farming is not the problem but a consequence of the problem.

A transactional approach to coping with farm stress necessitates not only focusing on personal adjustments to the situation but also examining ways the situation can be changed. The despair felt is deeply personal, while the problems which are for the most part not of one's own making are social, economic and political. Knowing that many other farm families share the same experiences and problems can help reduce the tendency for self-blame and can help overcome the tendency to ostracise one's self. Becoming aware of the fact that the problem is a social or structural problem and not a personal one can be a stimulus to change the conditions that are causing some of the problems (Levine, 1988). Prairie history documents the formation of grain companies, co-operatives and organisations such as the Wheat Pool as ways that the early farmers changed some of the structural problems causing economic stress in their lives.

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SECTION 4

LAND AND TRANSPORTATION

Family Labour Processes, Land, and the Farm Crisis in Saskatchewan

JoAnn Jaffe

Crisis has come to characterise much of family-based agriculture in Saskatchewan during the last two decades. Agriculture in capitalist economies is always characterised by winners and losers, but at times of high land and commodity prices many farmers imagine that they will be the ones to be successful. During the good times farmers feel that you only lose the farm if you are a bad manager; during the hard times it is enough to have bad luck—or to have expanded imprudently. Families find themselves out of business or in danger of losing their land due to problems with intergenerational transfer, increasing production costs with stagnating commodity prices, and high debtload. These problems are the inevitable result of competitive, individual production on private, fully alienable, land.

The Farm Economy and the Gendered Labour Process

Saskatchewan has gradually moved from being a mixed farm economy dominated by wheat to one in which most farmers are increasingly engaged in the specialized production of wheat or other grains. The increase in seeded acreage to canola and other specialty crops has primarily come from land taken out of summer fallow (Saskatchewan Agriculture and Food, 1995). This reliance on wheat, however, is one of the principal ingredients leading to the boom-bust nature of Saskatchewan agriculture and rural life. Canada produces just 4% of the world's wheat production; it exports 80% of its wheat, yet commands only 20% of the export market share in wheat (Shmitz, 1995). Saskatchewan produces approximately 60% of Canada's wheat. This makes Canada, and therefore Saskatchewan, a price-taker in its principal commodity. Like many other agricultural commodities, the price of wheat on the world market is normally quite volatile and unpredictable due to such exogenous variables as weather and politics.

Since the time of settlement, most of the agricultural production in Saskatchewan has been family-based and organised around a farm labour process and household division of labour. The gender and age of family members significantly determines their activities and control over their work and its product. As is true of urban households, however, rural families have found that changes in the wider society and economy have reorganised the way members interact and what they do. Individual roles and the meanings of those roles are evolving along with household tasks. The farm family of today envisions and pursues different short-term and life strategies than past generations.

The household has developed from one in which all members were "productive," to one in which usually only the man is considered to be a productive member of the farm. One can conceptualize the reproduction of the family farm as involving four overlapping labour processes: that of the domestic household, consumption-oriented farm production, direct farm production, and off-farm work. Until the 1950s, normally all household members had activities that contributed to farm production. Besides contributing labour to produce crops, such as vegetables, that were often processed and consumed at home, women were also occupied with activities such as making and selling butter and tending hens from which they sold eggs. The money they received was an important part of the family's income.

It is an understatement to say that farm women worked hard. Several studies conducted by farm women themselves documented the problems and conditions of work for prairie farm women. In 1920, the women's section of United Farmers of Manitoba conducted an initial survey of conditions in 48 farm homes and in 1922 surveyed an additional 307. In 1923, the Women Grain Growers of Saskatchewan mailed questionnaires to farm women to document the problems of rural housewives. Additionally, in 1927 farm women held a conference on women's work at the University of Saskatchewan that established a research committee aimed at eliminating the drudgery of women's rural work.

They found that farm households were just as likely not to have water as to have it. Farm homes typically contained no labour-saving devices, such as irons, mangles, bread mixers, or vacuum cleaners. Furthermore, they had no furnace heat or electricity. Farm women carried the wood and cleaned the stoves. They cooked, put up food, sewed, laundered, mended—and often also for hired men. Most performed outside farm chores, milked, tended gardens and poultry, and cleaned barns. In spite of these arduous tasks, government research and investment was usually spent on bolstering male farm productivity while ignoring women's work (Strong-Boag, 1992). Still, technology developed to enhance the productivity of the farm could have dramatic effects on the intensity of women's work:

> The combine is surely a great invention. No more big supplies of food to be stored for hungry threshers. No more getting up at half past three in the morning to prepare breakfast for fifteen or twenty hungry men and perhaps be awake for an hour before getting-up time, for fear you'd oversleep. Now I get up at half past five, have breakfast at six, the men go to the field and you hear the hum of the combine at half past six… . With the old method of threshing, there came wet weather, you had a crew on hand for perhaps several days… . You were supposed to feed them and be very pleasant as well… . With the combine that all changed (Saskatchewan farm wife, *Grain Growers Guide*, April 15, 1930, quoted in Strong-Boag, 1992: 408).

Technology could have contradictory effects on the farm household. The combine reinforced the family-labour nature of the family farm, and reduced the dependence of the farm on hired labour. It shifted that relationship upward to agribusiness and intensified the dependency of the farm on capital. Technology was experienced as a real benefit by farm women, however, because in many cases it reduced the drudgery of their work in the individual farm household.

Women exited or were pushed out of their traditional production as farming was industrialized and commercialized. With the advent of industrial dairies and milk quota, for example, farms either lost their dairy cows, or women were replaced by male farmers. At the same time, the tasks performed in maintaining the farm household have become increasingly narrow and simplified. Capital has carved off more and more areas that it has been able to turn into profitable business. As those functions have been taken out of the household, they have been able to be alienated from the community. The advent of modern appliances and improvements in food storage and convenience has meant less household-based production and transformation of farm-grown produce, but little or no reduction in the amount of time spent in taking care of the home and family (Goodman and Redclift, 1991; Statistics Canada, 1998b). Rural domestic work now resembles that performed by their urban sisters. Farm women are the primary caretakers of children, and do most of the housework, particularly that which is daily and repetitious, such as laundry, cleaning, and cooking (Statistics Canada, 1998b). Childcare has an extra dimension on-farm, however—that of maintaining labour discipline amongst the family labour pool.

Some ethnographers (cf., Seena Kohl, 1976) note that women's involvement in direct farm production dramatically increased between the years 1951 and 1971, but this is little recognised by either statistics or farmers. During the same period, farm operations ideologically transformed from being family farms to owner/operator farms. Although advertising still trades on the myth of the family farm in order to disguise the industrial nature of contemporary agricultural production, this is a conceptualisation largely abandoned by farmers themselves. Even farm women themselves are reluctant to recognise their contribution to the farm labour process. Many women—and this is particularly true of those who are middle aged or older—say they do not do farm work. When asked, they emphasise their role in the preparation of meals during periods of intense farm activity, but will also talk about participating in other activities such as driving the grain truck during harvest. Women perform many agricultural tasks, but they tend to be those requiring shallow knowledge and subject to supervision by farm men. They are not considered the "regular" or "normal" farm workers, and have little control over their work, which contributes to its invisibility. When younger women report driving tractors or combines, they do not seem to regard their labour with the same importance as that of farm men performing the same activity.

As the farm is becoming increasingly specialised, commercialised, and capital-intensive, women's involvement in direct farm-labour processes is becoming more diversified. This phenomenon has been observed in other industrial, capitalist agricultural economies (cf., Whatmore, 1988). At the same time, ironically, farm women's labour may be becoming more invisible on the farm. Farm women in Saskatchewan have lost the part of their job that was directly market oriented. Although today farm women are often expected to be able to perform many of the jobs done by men, "women's work" has increasingly become those tasks in the household that cannot be purchased on the market. Women also have become primary actors in non-agricultural farm tasks, such as bookkeeping and accounting, which are crucial for the survival of today's family farm. Meanwhile, however, farm women are frequently employed off the farm in full- or part-time jobs. The wages gained from their work are often what allow the family farm to survive.

History of Saskatchewan Land Tenure

Land tenure and the organisation of household production have long had a reciprocal effect in Saskatchewan. The predominant system of single-family, private ownership was created by the Canadian government when the prairie frontier was opened. It served particular interests and conformed to what was considered normal by the civil servants of the day. The settlement of the prairie provinces, using tools of national policy such as the Dominion Lands Act of 1870, played a central role in consolidating and building the Canadian nation. The Canadian government, in concert with commercial and industrial capital, pursued a strategy designed to establish an agricultural frontier bridging Central Canada and the prematurely admitted province of British Columbia. The settled prairies would provide a bulwark against American expansionism. The Dominion Lands Act would attract Eastern Canadians and foreign immigrants who would otherwise find free land in the United States under its Homestead Act of 1862 (Martin, 1938).

Even at the time, the amount of free land offered to each homesteader under the Dominion Lands Act was known to be too small to support a family in agriculture under prairie environmental conditions and the prevailing market regime. Policymakers assumed that homesteaders would gain pre-emptions or purchase additional plots of land from the grant given to the Canadian Pacific Railroad. The CPR would thus be able to build the transcontinental line from revenues obtained from land sales.

The Canadian government used land grants as the major source of revenue to build the railways, and sought thereby to avoid criticism from a parsimonious public during a time of debt consciousness (Martin, 1938). Still, the Canadian Pacific Railway was given a subsidy of $25 million.[1] It also received 25 million acres of land above and beyond the roadway and station sites in addition to open-handed tax holidays and mineral claims (Morton, 1938). Comparable federal generosity was extended to other rail companies such as the Great Northern and the Grand Trunk Pacific (cf., Gallagher, 1983).

Officials intended that the execution of this "national policy" would result in the widespread production of an export staple—grain—which would need a profusion of commercial activities to market it. In turn, farming families would provide demand for clothes, shoes, furniture, housewares, and agricultural implements (Norrie, 1992). Eventually, this population would supply surplus labour for central Canadian manufacturers. The "national policy" in effect established an internal colony in Canada in which the economy, land, and natural resources were administered and controlled in Ottawa. Not coincidentally, the federal government was also the recipient of revenues from these sources:

> The interest of the Dominion in the lands is in the revenue which it can derive from the settler who makes that land productive. The Dominion of Canada can make millions out of the lands of the Northwest and never sell an acre... The increase in our customs returns, the increase in our trade and commerce, the increase in our manufactures, is to

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[1] N.B. The value of this subsidy is in the dollars of the period.

> a very large extent due to the increase in settlement on the free lands of the Northwest Territories… The interest of the Dominion is to secure the settlement of the lands, and whetherwith a price or without a price makes little or no difference. It is worth the while of the Dominion to spend hundreds of thousands of dollars in promoting immigration … in surveying and administering these lands, and then give them away" (Frank Oliver, Minister of the Interior, 1908, quoted in Martin, 1938: 402).

This internal colony had another colony within it. With the purchase of Rupert's Land from the Hudson's Bay Company came treaties that led to the establishment of reserves for Native peoples on relatively small and often marginal areas. This land would be held in common by the group occupying it. The Metis people were given "scrip" that they were to use to purchase land individually. Many Metis lost their land as land speculators traded scrip for cash at drastic discounts (Conway, 1994).

Through colonisation and the creation of a "white settler" society, the federal government was successful in establishing a staple regional economy. Its more immediate purpose, however, was to create wealth directly through settlement and land speculation, for example, with the land holdings of the Hudson's Bay Company, land and colonisation companies and the railways.

The Dominion Lands Act provided for settlement by individual men and their families, and thus instilled a bias in the land tenure system of Western Canada against multiple-operator, co-operative, and communal farming from its inception. It also virtually made female land ownership impossible, and entrenched inequality against women. As the act

> respecting "homesteads" evolved, a basic inequality between the genders was created: women were generally not able to file for homesteads unless they were widowed and with children under 18. This fastened in law a broader structure of patriarchy that saw women as responsible for home and hearth and men as responsible for farm production. But men could not accomplish frontier settlement and the production of staples agriculture without women and families. Hence policies evolved to locate families on the land including importing women as servants, to become wives. As crucial to the national policy as women were, their role in farm production became officially invisible (Stirling, 1991).

The purpose of the Dominion Lands Act was to create land as private property within the broad framework of family patriarchy. In so doing, the Act established the ability and conditions of a person to "own" land, meaning it gave a set of rights over a piece of land to an owner. The Act thereby outlined the relationship of an owner to the rest of society. At the same time, the Dominion Lands Act made Western land "alienable"—able to be bought and sold—and in essence then created a market in land. By providing a means to identify and record the financial history of every quarter section of land, the Act established the legal basis for private accumulation of wealth from Western lands.

The patriarchal structure created by the Dominion Lands Act persists to this day. The vast majority of Saskatchewan women still get access to property through patriarchal relations—principally their conjugal status. It is still "his" farm and "his" land. This is particularly marked if one considers that her on-farm work and off-farm income often define the successful family farm.

The Farm Crisis

Agriculture in Saskatchewan has come to be characterised by a perpetual state of crisis. Indeed, nearly all of rural Saskatchewan has been in crisis at least since the early 1980s, and many would say, long before that time, as well. One might call it a crisis of rural depopulation, of the boom-bust cycles of prices for the dominant commodity, fluctuating land values, intergenerational transfer, or loss of rural services, but it is likely true that all of these interrelated factors have played their part in the continuing predicament of rural Saskatchewan.

The farm crisis has its roots in the over-expansion that followed the threefold increase in wheat prices that was a result of shortages in Russia and Eastern Europe in 1973 (Friedmann, 1991). High prices for wheat—and rising expectations—were capitalised into land values, so that price for land took a dramatic upswing, as well. At the same time, high prices for oil due to a cartel of oil-producing countries restricting supply increased the amount of money in banks available for borrowing. Along with shortages in wheat, the (artificial) scarcity of oil created by the cartel produced a sense of impending limits to natural resources that would translate into permanently higher prices for natural resources in the future. Banks lost the reticence to lend that they had acquired during the depression of the "Dirty Thirties" and began encouraging Saskatchewan farmers to borrow in order to expand their base of production (Shalit and Shmitz, 1982).

Whereas previously most of the farmland in Saskatchewan had been purchased in cash, farmers began borrowing with the enthusiastic support of their bankers (Shmitz, 1995). Levels of farm debt skyrocketed as many farmers bought another quarter-section or two. Between 1972 and 1982, the value of Saskatchewan land and buildings increased seven-fold (Saskatchewan Department of Agriculture, 1998). By 1983, however, the boom had gone bust. Interest rates jumped to double digits and the price of wheat plummeted. Land prices dropped, although not as much as wheat. Many millionaires were created who had been lucky enough to sell their land during the boom. The bust left a legacy of farm debt and bankruptcy that is still being dealt with today. Virtually no part of the province has escaped their effects.

Many rural places have lost their schools, hospitals and other organisations, and others are facing the same prospect. Rural businesses are also in trouble. With population decline, farm service-centre consolidation, and the tendency for people to drive to large centres to shop, fewer and fewer communities have been able to support much commercial activity. Towns are losing their grain elevators as recently built giant inland terminals draw on huge catchment areas for grain. Rail lines have abandoned many "unprofitable" locations as the federal government has abandoned its commitment to rail service. With the demise of the Crow's Nest Pass Grain Rates that equalised and subsidised transport costs for grain, even more small towns can expect to lose their rail lines. In the context of accelerating rural depopulation, each loss seems to remove the keystone of support for the Saskatchewan rural town. For these places that are organised around a population engaged in grain farming, the loss of even one service can mean the virtual end of the town.

As insufficient population may mean the death of a rural community, so might the loss of the surrounding rural community threaten the existence of farm households. Originally Saskatchewan rural communities were solely economic entities due to the way they were founded at settlement. The Dominion Lands Acts of 1872 established communities where none had been before for the convenience and profit of outside interests—principally the railroads—and did so by settling individual, unrelated households that had little in common but their desire to make a living on the northern prairie. But many communities came to mean more. A community of neighbours, schools, curling and hockey rinks, and church built the social fabric in which households became enmeshed. Household and work constituted the character of community. Co-operative practices and institutions—both informal and formal—such as mutual aid in productive and domestic work, pooling, machinery co-ops, and production co-ops, are important social practices that maintain community and families in farming.

While this need for community is the hidden reality behind family farming, keeping up those networks and ties is often the work of women through volunteer activities, day-to-day social exchanges, and domestic reciprocity. Community is a contradiction that needs to be actively managed as farmers compete with their neighbours—particularly via land markets. The invisibility of women in doing the work of community allows the general public, politicians, and farmers to uphold the myth of individualism and individual responsibility in farming. Indeed, it underlies what can be seen as the myth of the individual family farm.

Table 1. Number and Size of Saskatchewan Farms

Year	Number of Farms	Average Total Acres	Average Cultivated Acres
1906	55,971		
1911	95,013	296	125
1916	104,006	354	189
1921	119,452	369	210
1926	117,781	390	235
1931	136,471	408	246
1936	142,391	400	236
1941	138,713	432	256
1946	125,612	473	283
1951	112,018	550	346
1956	103,391	607	392
1961	93,924	686	459
1966	85,686	763	531
1971	76,970	845	603
1976	70,958	923	659
1981	67,318	974	723
1986	63,431	1,036	781
1991	60,840	1,091	822
1996	56,995	1,152	870

Source: Statistics Canada. 1998a. Agricultural Census 1996.

Saskatchewan farms have been getting progressively larger since the 1940s, as shown in Table 1, and as they do they become more land extensive and capital intensive. The consequence is fewer people on farms and in rural areas. Saskatchewan has historically been a net-exporter of population to other parts of Canada. Most of these people have come from rural Saskatchewan, and many of these have come from farms. From 1971 to 1981, the boom period in Saskatchewan agriculture, the farm sector had a net loss of 71,000 people, based upon estimates of the expected natural increase and the actual population (Stirling, 1991). As is shown in Table 2, the actual farm population increased in the depression years of 1931–36, but has decreased ever since. In fact, the steepest rates of decline have tended to be in booms, rather that busts.

The mixed farm economy dominated by wheat that was prevalent before 1945 was a relatively flexible form of production. While still involved in global markets, the family farm had many alternative production pathways and outlets for its production that provided some options as market and agronomic conditions changed. Changes in the relative prices of livestock and feed grains, for example, could be met by changes in feeding regime

Table 2. Saskatchewan Population, 1906–96

Year	Total	Rural	Farm
1906	257,763	209,301	n.a.
1911	492,432	361,037	n.a.
1916	647,835	471,538	n.a.
1921	757,510	538,552	n.a.
1926	820,738	578,206	n.a.
1931	921,785	630,880	564,012
1936	931,547	651,274	573,894
1941	895,992	600,846	514,677
1946	832,688	515,928	434,019
1951	831,728	579,249	399,473
1956	880,665	558,662	362,231
1961	925,181	527,090	305,740
1966	955,344	487,017	281,189
1971	926,240	435,615	233,792
1976	921,325	409,990	202,710
1981	968,313	405,147	187,163
1986	1,009,610	389,415	168,505
1991	988,928	365,531	159,725
1996	990,237	363,059	145,560

Source: Statistics Canada. 1998a. Agricultural Census 1996.

or livestock numbers. This flexibility was based on a family labour process in which all members of the farm family were involved and in which there were strong resource flows amongst the various enterprises of the farm and the household. This provided a measure of stability to the farm and dampened competitive pressures to expand.

The reasons for contemporary Saskatchewan farms to get larger are economic, social, political, and cultural. Unlike industries characterised by the full mobility of factors of production, prices of agricultural commodities received by Canadian farmers will frequently not cover the total cost of production including returns to land and labour (Yunez, 1988). Agriculture is subject to the cost-price squeeze in which the long-term cost of inputs continues to rise relative to the prices received for raw product. Farmers, then, try to reduce costs by increasing the productivity of labour through the use of higher-yielding seed, chemical inputs, and—particularly in the grain economy—with machinery that enables more land to be farmed by one person. Tax policies reward investments in machinery and land through accelerated depreciation and capital gains treatment. Furthermore, most subsidies are based upon volume of production and acreage, so that larger farmers are favoured (Conway, 1989). Farmers use their knowledge of size-based subsidies and policies in the decision to expand.

The emphasis on machinery to improve labour productivity has resulted in a progressive tendency towards specialisation. Most farm machinery is produced to perform particular tasks in specific cropping systems. As individual farmers invest their capital or take on debt to buy expensive machinery, they rationalise and amortise the cost by spreading it across more land. Thus, specialisation spurs farms to get larger just as larger farms encourage specialisation.[2]

There are other compelling reasons for farms to get larger. The special relationship of land to the farm family under advanced capitalism is one of the principal factors. Land is the family's source of regular income, as well as its store of wealth. As the consumption expectations of all families steadily increase, so do the farm families. Because returns from agriculture must satisfy family "needs" as well as provide the basis to renew production, family farmers tend to make decisions that lead them to maximise income rather than rate of profit.

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[2] This relationship is actually more complicated than it appears at first blush, because larger farms may have more capacity to diversify by virtue of their size or their resources. They also are more likely to be multi-operator farms, or to be engaged in machinery pooling (Gertler et al., 1998).

The life savings of farm families are tied up in their land. The farm family depends upon land to increase the family's wealth over time. Farmers are more familiar with land as an investment vehicle, and thus tend to invest in land, rather than stocks or bonds, when they have the disposable income. This dual role for land—to provide current income as well as future wealth—accentuates the risky nature of farming for farm families. Those who own land are much more vulnerable to boom-bust cycles than those who rent (Shmitz, 1995). During the boom, land owners win big. But during the bust, they can lose everything.

This land tenure system also makes intergenerational transfer a very vulnerable process. Many have failed. Necessarily it involves the banks and other sources of non-farm capital. The farm must provide each generation with their daily income and the wherewithal to buy up the previous generation's assets. Many older farmers are awaiting an increase in land values in order to begin their retirement. Thus, were farming to become financially "healthy" again, it is likely that there would be a major wave of farm consolidation leading to even bigger farms and fewer farm people.

Intergenerational transfer presents considerable difficulties that need to be negotiated if it is to be completed successfully. It depends on new farmers being willing and able to take over the farm (Salamon, 1993). Transfer can be jeopardized by ruptures in the family or conjugal pair, such as can occur through divorce or separation. Parents also must have a commitment to continuity with succession anticipated by and accomplished through parental plans and provisions. Transfer is accomplished through stages in which the period between the first transfer of day-to-day management and the final financial transfer of ownership can take 20 years or more in many families (Keating, 1994). During this time, the entire family—not just the "principal farmers"—must cooperate if the transfer is to be accomplished relatively smoothly. As the primary consumption manager, the farm wife must defer amenities and minimise expenditures in order to have sufficient means of support and investment through the transfer process. Sibling co-operation is also essential, as the farm at the least represents the legacy of the family.

Farm transfer also can depend on an adult child having learned to farm. Although still essential, the traditional way of knowledge—being an apprentice to a farming parent—is increasingly insufficient, as farmers need to know a little about more and more different fields. Many parts of the farm operation can no longer be learned by following day-to-day operations. As a result, many children of farmers go to university to master components not learned on-farm, such as financial management. This creates a cultural gap that accentuates the generation gap between farm parents and children who must work together over a period to make the transfer work successfully, and is one factor in increasing business orientation of farming. Additionally, many university-educated children of farmers—particularly women—leave rural Saskatchewan, contributing to population decline and the inability of many rural males to find household partners.

Not all farms are subject to the same pressures from the marketplace. Whether because of luck, timing, gender, ethnicity, connections, or skill, some farms finance their expansion with greater ease than do others. Along with the trend towards larger and fewer farms is

Table 3. Distribution of Saskatchewan Farm Land 1971 –96

Year	Under 10 acres	10–69 acres	70–239 acres	240–399 acres	400–559 acres	560–759 acres	760–1,119 acres	1,120–1,599 acres	1,600–2,239 acres	2,240–2,879 acres	2,880–3,519 acres	3,520+ acres	Total # of farms
1971	462	462	7620	12392	11776	12623	15317	9313	4156	1308	(est. 616)	(est. 923)	76970
1976	387	956	6833	9894	9291	10843	14633	9910	4752	1615	692	1152	70958
1981	505	1189	7438	8577	7718	9314	13510	10012	5190	1858	792	1215	67318
1986	593	1107	7017	7505	6514	7939	12323	9892	5793	2216	1034	1498	63431
1991	383	1186	7372	6898	5823	6848	11087	9491	6249	2553	1185	1765	60840
1996	482	1418	7786	6431	4870	5632	8977	8671	6425	2776	1472	2055	56995
1971	0.6%	0.6%	9.9%	16.1%	15.3%	16.4%	19.9%	12.1%	5.4%	1.7%	0.8%	1.2%	100%
1976	0.5%	1.3%	9.6%	13.9%	13.1%	15.3%	20.6%	14.0%	6.7%	2.3%	1.0%	1.6%	100%
1981	0.8%	1.8%	11.0%	12.7%	11.5%	13.8%	20.1%	14.9%	7.7%	2.8%	1.2%	1.8%	100%
1986	0.9%	1.7%	11.1%	11.8%	10.3%	12.5%	19.4%	15.6%	9.1%	3.5%	1.6%	2.4%	100%
1991	0.6%	1.9%	12.1%	11.3%	9.6%	11.3%	18.2%	15.6%	10.3%	4.2%	1.9%	2.9%	100%
1996	0.8%	2.5%	13.7%	11.3%	8.5%	9.9%	15.8%	15.2%	11.3%	4.9%	2.6%	3.6%	100%

Source: Statistics Canada. 1998a. Agricultural Census 1996.

the tendency for wealth to be concentrated in a smaller and smaller fraction of the farms. As can be seen in Table 3, rural Saskatchewan is increasingly developing a bi-modal pattern of landownership—referred to as the phenomenon of the "disappearing middle." The minority of farms are extremely large and produce the majority of the output, whereas the majority are relatively small and produce a fraction of the total production. These large farms are a heterogeneous group. While the majority are specialised, individual grain farms, this group also includes heavily capitalised, multi-specialized farms, multi-operator and extended-family farms, and corporate and Hutterite farms. Some of these farms—particularly those in the second group—diverge from the family farm labour processes presented here (Gertler et al., 1998).

To Create a Different System

By the late 1980s, it was clear that the historical trajectory of Saskatchewan agriculture was leading to the marginalization of family farming. Consequently, organisations interested in Saskatchewan agriculture and rural life independently formed two groups to try to find solutions to the farm crisis. These groups reasoned that bankruptcies, problems with intergenerational transfer, and rural depopulation were all centred in the system of land tenure in the province. One group, sponsored by the International Agriculture Network (a coalition of the National Farmers Union, Oxfam, and CUSO), produced their report, "Saskatchewan Land Co-operative" (Bendel et al., 1992), through a participatory process of action research. This proposal suggested the establishment of a provincial, largely farmer-controlled, co-operative that would buy, administer, and lease land to farmers.

The other group was a coalition of Credit Union Central of Saskatchewan, Federated Cooperatives, the Saskatchewan Wheat Pool, and the Interchurch Committee on Agriculture. The research and report, "Community Based Land Trust Models for Saskatchewan" (Brown et al., 1992), were conducted by economists at the University of Saskatchewan and then presented to a focus group of farmers. This proposal attempted to provide the basis for the formation of community-based land trusts. Capital for the trusts would be acquired through the transfer of land in exchange for tradable RAUs (representative acre units) that would function as financial securities.

Saskatchewan people have several other experiences of alternatives to strictly private ownership, such as the Land Bank (detailed in the paper by Lynn Gidluck in this volume), co-operative pastures, Crown leases and farm co-operatives to learn from and build upon. Still, both proposals have foundered since the time of their development. The Saskatchewan government has been reluctant to take the political risk inherent in each of these proposals. The Land Co-operative bears too much resemblance to the politically troublesome Land Bank. It, furthermore, asks serious questions about the institutions of property and the system of land ownership present in the province. In this way, it is truly a proposal out of step with the present culture of privatisation and "free market" dominance. The Land Co-operative also would demand a sizeable commitment on the part of the provincial government to guarantee investment vehicles that would provide funding for the venture. While recent financing of undertakings by private corporations such as the multi-(hundred) million dollar relocation of Crown Life Insurance to Regina has not been viewed as particularly problematic by the provincial government, requests for funding public projects have been met with reminders of budget deficits and fiscal austerity.

These proposals can also be seen to contradict the growing individualism in the farm population. Although it is possible to see some ruptures in what appeared to be the complete takeover of political and social landscapes by neo-liberalism, the general trend towards farming as a business so far prevails. Farmers are increasingly confronted with two alternatives: get-big-or-get-out specialisation or diversification—which is in reality capital-intensive multiple specialisations. Both bode ill for rural communities. The former continues to result in rural depopulation; the latter, in the erosion of historic ties of community, which are replaced by integration into business relationships of commodity groups and associations (Gertler et al., 1998). For alternatives to work, they will have to offer a third path. Obviously land tenure is only one of the elements of Saskatchewan agriculture that needs reform if the negative trends in the industry are to be reversed and rural life revitalised. But it is a crucial element; without reform to the land tenure system, it is doubtful that vibrant rural communities based upon a healthy and well-populated farm sector are possible.

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The Saskatchewan Land Bank: An Experiment in Land Reform, 1971–82

Lynn Gidluck

The Saskatchewan Land Bank program, implemented by the New Democratic Party (NDP) government of Allan Blakeney in 1971, was a unique experiment in government-assisted intergenerational transfer of farmland and land reform. During its 10 years of operation the Land Bank Commission purchased approximately 1.2 million acres of productive farmland and helped close to 4,000 young people establish a career in farming. The government agency purchased land offered voluntarily on the market at competitive prices from farmers wishing to retire and then leased this land back to young farmers, guaranteeing tenure until the age of 65. Program participants then had the option of passing their long-term lease on to their children.

The Land Bank provided lessees all the benefits of owning land, such as the ability to make all of the farm management decisions, the opportunity to do long-term planning, and the chance to pass the land on to their children upon retirement. While tenants had the option of purchasing the land from the government after five years of being in the program, the terms and conditions of the leases were so attractive that few chose to exercise this option, leaving behind a pool of publicly owned land. Despite a myriad of administrative problems, and a very intense political campaign mounted by opposition politicians, there was always stiff competition for these attractive, long-term leases.

The NDP government was defeated in the 1982 election and this spelled the end of the Land Bank. The new Progressive Conservative government was ideologically opposed to public ownership of farmland so they repealed the Land Bank legislation and replaced it with a program to assist young farmers in purchasing land.

Background

The right to own, buy and sell land on an unrestricted "open market" is sacred to the notion of "free enterprise" and was the primary incentive used to entice immigrants to western Canada in the period from 1870 to 1930. This system of land tenure, based on the widespread ownership of land on a small scale, bequeathed a set of problems for farmers in western Canada that have never been eradicated. Hoping for wide disbursement of undeveloped farmland, the Government of Canada, through the Dominion Lands Act, offered 160 acres of free land to anyone committed to working the land and building a residence within three years. Later the government improved the offer by allowing homesteaders to buy the adjoining quarter section of land for $3 per acre (Martin, 1983).

In their effort to attract as many settlers as possible and to stretch the land resources as far as they could be stretched, Ottawa encouraged the development of thousands of farms that were too small to be economically viable. By the time a farm family had improved its small holding and was able to expand to a more economic unit, many of the neighbours were in a similar position. Intense competition for land resulted and the only solution was displacement—the moving out of some settlers whose land could be purchased or rented by those who remained (Royal Commission on Agriculture and Rural Life, 1955: 38).

One of the direct consequences of this form of land tenure was that land came to be exchanged as a commodity in the marketplace for speculative gain and became increasingly subject to market pressures which were not directly related to the productive worth or potential of the land. This meant that only those settlers who had access to capital were able to expand their homesteads into viable operations. The market price of land (which averaged $32 per acre by 1920) reflected the price paid by wealthier immigrants and earlier established farmers for expanding their land base. Since the bulk of land was obtained either on free claim or at $3 per acre for adjoining quarters, the "open market" was an expensive but narrow one until land settlement was completed in the 1920s (Mitchell, 1985: 14).

Even from 1901 to 1931, when there was still homestead land available, land represented the largest expense to prairie farmers. In 1901, 63.1% of the capital costs of operating a farm were being utilised to secure and maintain the land and buildings[1] required for the farm operation. In 1911 this number climbed to a staggering 79.2% and dropped off slightly to 77.2% in the midst of the Great Depression. Despite all the changes that have occurred in agriculture from the turn of the century until the present, land has remained the highest capital cost and the greatest barrier to securing and maintaining an adequate livelihood on the farm (see Table 1).

Expansion of farm operations became an expensive, but necessary, proposition. Renting made good economic sense because the costs associated with leasing more closely reflected the productive value of the land. Most leases, however, did not offer long-term security of tenure and availability was often a problem. As a result, private ownership has remained the predominant form of tenure in western Canada. Besides the problems associated with transferring land from one generation to the next, the over-concentration of resources in land has meant that agriculture has suffered from a lack of diversification.

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[1] The census does not readily break "land" and "building" costs down into separate categories. However, based on annual building depreciation, one would estimate the capital cost of buildings to be in the range of 10–20% of the total for "land and buildings." *See* Argue, Stirling and Diaz, 1990, Appendix E.

Table 1. Average Farm Capital Investment and Distribution of Investment, Saskatchewan

	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991
Average Investment ($)	3,307	8,765	13,814	9,325	6,459	17,781	30,947	71,353	465,980	42,267
Percentage Invested in:										
Lands and Buildings	63.1	79.2	77.4	77.2	73.4	59.4	64.8	70.4	79.9	68.4
Machinery/Equipment/	8.7	6.9	10.7	14.6	15.9	26.4	24.0	18.7	15.7	24.7
Livestock/Poultry	28.2	13.9	11.9	7.7	10.7	14.2	11.2	10.9	4.4	6.9

Source: Census of Canada.

With over 70% of their capital costs poured into purchasing land, farmers have not had the flexibility to diversify their operations. As a result, the fortunes of the Saskatchewan economy have historically remained extremely susceptible to the instability of world grain markets.

Political Responses to the Land Tenure Question

The depression and drought of the 1930s was the first real demonstration of the comparative worthlessness of owning land that does not provide a liveable income. Many farm families were unable to pay the accumulated interest on the debt and taxes they had accrued in order to purchase land. Between 1928 and 1932 the interest owed on debts in rural Saskatchewan rose from one-tenth to nearly three-quarters of the net cash operating income of farmers. The only thing that saved them from certain foreclosure was that the economic disaster was so overwhelming and universal. Mortgage companies and banks could gain nothing by foreclosing because forced sales would bring little in return (Lipset, 1971: 174).

It was these circumstances that prompted the United Farmers of Canada (UFC) to push for land reform in Saskatchewan. According to Lipset, delegates to the UFC convention in 1931 called for a moratorium on all foreclosures and debt seizures, and for government action to see that "use leases (on all farms) be instituted, and all land and resources now privately owned be nationalised as rapidly as opportunity will permit" (quoted in Wilson, 1981: 110). The UFC joined forces with the Independent Labour Party in 1932, under the leadership of M.J. Coldwell, to form the Farm-Labour Group. This marked the beginning of the movement toward the formation of the Co-operative Commonwealth Federation (CCF), which changed its name in 1969 to the NDP (ibid.).

While the CCF rejected full-scale nationalisation of the land base such as the UFC was advocating, the party did opt for a new set of terms for private ownership of land use where farmers would be able to voluntarily approach the government to exchange the title of their land for a special use-hold lease. Under this plan, the basic unit of production would still be the family farm and individuals would continue to work and reap the benefits of the land (Gonick, 1975). The CCF made every attempt to convince the public that what they were proposing in the 1934 general election was not land nationalisation, but a new set of terms for private land use. The Conservative and Liberal parties, all the daily newspapers of the province, most of the weeklies, as well as the Catholic Church, waged an emotional campaign in which they argued that if farmers were to vote Farmer-Labour (CCF), their land would be taken away from them and state farms similar to the ones in the Soviet Union would be set up (Lipset, 1971: 109).

Many of the leaders in the CCF were convinced that their platform on land reform was the major reason for the disappointing results of only electing five members to the legislature in the 1934 election. As a result, they dropped all reference in their party policy to land reform. When the CCF standing more than doubled in the Legislature in 1938, this was seen as evidence of the wisdom of the new course (Brown, 1972).

T.C. Douglas, provincial leader of the CCF after 1941, often promised that a CCF government would resign if a single farmer was evicted from his farm. True to his word, Douglas launched a series of controversial measures designed to relieve the immediate debt burden and threat of foreclosure for farmers. Despite all of these measures, Douglas never gave any consideration to land reform even when his own Royal Commission on Agriculture and Rural Life in 1955 detailed the necessity for change and outlined some very clear policy recommendations in this area (Harding, 1991: 50).

The Royal Commission challenged the traditional belief that full ownership of the resource base offered the greatest security to the farmer and implied the most stable social relations. Since renting land had become a reality early in the history of agricultural production on the prairies, the Royal Commission did not include ownership of land as a necessary attribute for a family farm. It was the Commission's belief that insecurity of tenure, or the short-term nature of most rental leases, was the most undesirable aspect of the rental option. If farmers were able to rent land for long-term, secure periods of time, and were able to pass the lease on to their children, most of the favourable attributes of ownership would be retained. The Commission was neither rejecting private ownership of farm land nor suggesting large-scale nationalisation of the resource base. They recommended that a senior government utilise its control of Crown lands by leasing out private lands to small operators for long-term, secure lease periods. In this manner the rental option could be more equitably used by farm families who presently did not have viable operations (Royal Commission on Agricultural and Rural Life, 1955: 116–17, 154–57). The Royal Commission was not recommending a radical departure from current policies. It was suggesting an expansion of Crown land policies that had been in place since 1930 when the federal government transferred jurisdiction of public land to the provinces. At that time the provincial government organised a Lands Branch to administer the approximately 10 million acres of land that it received from the federal government.

Provincial holdings increased in the early 1930s due to the concentrated settlement of large areas of poor productivity, combined with the economic depression and drought conditions. Many homesteads reverted to the Crown, as well as large acreages of school lands that had previously been sold to individuals. In 1935 the federal Prairie Farm Rehabilitation Act (PFRA) and the provincial Land Utilisation Act were born. By 1945, more than 1.2 million acres were enclosed in PFRA community pastures in Saskatchewan. By 1954 this acreage had increased to 1.5 million acres (ibid.: 41).

In the late 1940s and early 1950s public investment in Crown land improvement was stepped up, particularly in potentially productive areas on the northern fringes of settlement. Resettlement continued for farm families leaving low productive areas, but also for ex-servicemen. Following the war, many veterans who qualified under the Veterans' Land Act were settled on Crown lands, being given 33-year leases with the option to purchase this land at the end of ten years (ibid.: 44).

The only significant change in policy direction that the Royal Commission on Agriculture and Rural Life was recommending in 1955 was that the government extend its land holdings to include productive land and that the government purchase the land holdings of absentee landlords whenever such holdings came up for public sale. In turn, the government could allocate productive land on a points system to determine who was the most deserving recipient of land—similar to how the Lands Branch allocated marginal grazing land.

The land reform recommendations of the Royal Commission on Agriculture and Rural Life were shelved until the late 1960s when a rejuvenated left pushed the CCF/NDP to explore alternatives. The leadership of the Party continued to believe that Saskatchewan's farm community's very basic and emotional commitment to private ownership of land was so pervasive that it would be unwilling to accept alternative forms of land tenure.

The Birth of the Land Bank

In the late 1960s, the National Farmers Union joined other left-wing forces within and outside of the NDP, including trade unionists and community activists, university students and teachers, to push the party to examine radical alternatives to the farm crisis.

These groups pitted themselves against the more pragmatic, or conservative, forces within the NDP which included an old-guard populist contingent from the rural constituencies, small businesses, the co-operatives, and the Teachers' Federation. A second conservative influence included many of the younger MLAs who had been elected in 1967. Also included were some of the professional organisational staff of the party (Roberts, 1983: 7).[2]

The left-wing elements came together at the 1969 NDP provincial convention to win one-third of the provincial council positions and close to half of the executive positions. This included the office of party president as well as two of the four vice-presidency positions. The left wing was also successful in reintroducing the issue of public ownership of farmland. Delegates to the 1969 convention debated a resolution which echoed the recommendation of the 1955 Royal Commission on Agriculture and Rural Life to set up a Crown corporation to acquire farmland and to lease this land back to young farmers. This resolution was amended in the agricultural panel to include a clause, "looking toward the eventual public ownership of land as a basic resource of all people" (SAB, Blakeney Papers, R-800-I-1950). The resolution was deleted once it reached the main convention floor but the spirited debate indicated that many people within the NDP believed that a fundamental restructuring of the rural economy was necessary to combat the farm crisis (ibid., R-1284).

The newly regenerated party executive pushed the NDP to hold a series of policy meetings throughout the province in the early part of 1969 for the purpose of coming up with creative, socialist responses to the recession. Out of this process, the NDP emerged with a radical plan to revamp the rural economy. The most highly contested aspect of this program was the call to create a government agency to purchase farmland and establish a permanent public land reserve. Those pushing for such reforms believed that to have any real effect in solving long-term structural problems, such an agency would have to be part of an integrated program to increase the number of farm units in the province. This, the left-wing coalition contended, could be accomplished through specific measures such as setting maximum limits on farm size, initiating a net income policy, providing a universal pension scheme for retiring farmers, and preventing foreign, absentee, and corporate ownership.

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[2] This resolution was sponsored by the Saskatchewan Waffle Group of the NDP.

The Crown land assembly idea, or land banking, became the most popular aspect of this proposal because it provided a potential long-term solution to one of the most urgent and pressing problems facing rural Saskatchewan during this period, which was the land transfer issue. A significant number of farmers were either approaching or at retirement age and were having trouble selling their land for what they thought were reasonable prices. At the same time, people who wanted to enter farming had great difficulty finding credit to purchase land.

Intense debate took place within the party over these radical ideas to revamp the rural landscape. This debate reflected the larger question facing the NDP, which was whether the Party could be pushed from within to accept a more participatory vision of democratic socialism. At the time that the Saskatchewan NDP was taking a decisive turn to the left in terms of policy discussions, a splinter group within the party, which called itself the Waffle group, was just beginning to organise a national challenge to the right-wing direction which the NDP had been taking. From 1969 to 1973 the Waffle seriously challenged the New Democratic Party establishment by attempting to organise the grassroots membership of the NDP and take control of the party's organisation to redefine it as a political movement and as a socialist party (*see* Brodie 1984; Hackett, 1989; Brodie and Jensen, 1980; and Bullen, 1983).

An intense debate occurred within the NDP over whether the Waffle should be allowed to publicly criticise the policies of the NDP. Many of the caucus members and party leaders felt that the Waffle should be forced to adhere to official party policy or leave the party. This debate resulted in the resignation of party leader, Woodrow Lloyd, in March 1970. Lloyd had been sympathetic to many of the Waffle's ideas and aspirations and many people in the party thought this was unsuitable behaviour for a leader (Currie, 1990).

The leadership convention to replace Lloyd occurred during the party's provincial convention in July of 1970. The Waffle fielded Don Mitchell, a young political scientist from Moose Jaw, as its candidate. The frontrunner was Allan Blakeney, who had been a cabinet minister under the Douglas government. Also in the race was Roy Romanow, MLA for Saskatoon-Riversdale and George Taylor, one of Saskatchewan's leading labour lawyers (*see* Gallagher, 1970: 10-14; Morton, 1986: 107). In the period leading up to the convention, the leadership candidates appeared at eleven town hall meetings in all regions of the province. Most of the debates focussed attention on the candidates' proposed solutions to the agricultural crisis. Don Mitchell, commenting on the meetings, said that by the time of the provincial convention, Blakeney had come around in favour of Crown Land Assembly, and Romanow (who had earlier ridiculed and opposed the policy) was no longer attacking it (SAB Waffle Papers, R-1284-IX-A-I).

The *Leader-Post*'s reporting of the leadership race highlights the split within the party and the dramatic closeness of the leadership vote (July 6, 1970). Blakeney trailed Romanow by a handful of votes on the first and second ballots. Taylor dropped off on the first ballot after pulling 78 votes. Mitchell polled a surprising 187 votes on this ballot. On the second ballot Blakeney received 311 while Romanow got 320. Mitchell dropped off the second ballot with 219 votes. The final tally on the third ballot was 407 for Blakeney and 349 for Romanow; 94 Mitchell supporters did not vote on the final ballot. As a result, Blakeney was elected leader of the party by only 48% of convention delegates.

Debate on policy issues also proved to be hot amongst grassroots delegates to this convention. There was a spirited discussion around the report of the agriculture and rural life committee and the Land Bank proposal. Some NDP members said they believed in the Land Bank in principle but that it would not sell. It might even cost the NDP the election. Others went beyond that, saying that the government should not be entering the land market. Elwood Cowley, who later served as minister of finance during the Blakeney administration, states that "Although it never surfaced much at the time, and we paid little attention to it, many people within the NDP opposed in principle state ownership of the land" (1986: 25). An attempt was made to make the Land Bank proposal less radical by giving farmers the option to buy back the land they sold to the government after leasing from the Crown for a period of five years. In the minds of those who had drafted the policy paper, this was not an unreasonable amendment. They felt it would allay the fears of those who would opportunistically say that this policy was designed simply to take the land from farmers (McCrorie, 1990).

Many people within the party believed that with the option to purchase, the program would simply be a temporary solution to the problems associated with land tenure. It was pointless, they argued, to buy the land from the parents, rent to the children, and then let the children buy it somewhere down the line when it looked financially attractive to do so. Such a Land Bank would do nothing to eliminate speculation in farm land and instead of providing an alternative to private land ownership, would be a means of achieving private ownership in stages. At the end of the day, convention delegates voted to defeat the option-to-purchase clause.

The NDP left its provincial convention with clear evidence of support from its members for a daring agricultural policy. The party also left the convention, however, with a new leader and a new executive dominated by the more moderate social democrats within the party who were not attracted to the notion of radically changing society. The problem now was how to formulate an election platform on the basis of what had been passed at the convention. Such a platform would have to be sensitive to the Opposition Liberal party and a significant proportion of the farm population that would be deeply opposed to government intervention in the land market.

On June 23, 1971, Allan Blakeney won a stunning electoral victory. The NDP swept 45 out of the 60 seats and received 55% of the popular vote. The new government now faced the daunting challenge of taking the ideas for land reform that the NDP had so fervently debated and devising a workable program to present to the farm population. This was no small task. The Land Bank program would be the first of its kind anywhere in the world. In the truest sense of the word, the government was undertaking an experiment.

The government went to work on developing the new program almost immediately upon taking office. The new minister of agriculture, Jack Messer, was able to present his vision of the new Land Bank to cabinet in December 1971 (SAB Messer Papers, R-600-116b) and after a series of 13 country meetings held throughout the province in January and February to seek public input, the legislation to establish the new land program was introduced on April 21, 1972 (Statutes of the Province of Saskatchewan, 1972: 261–88).

Operation of the Land Bank Program

The Land Bank Commission purchased land offered voluntarily on the market at competitive prices. The Commission then leased this land back to young farmers on the basis of need, guaranteeing tenure, and leaving lessees with the option to purchase the land after five years of renting it. Since budget restrictions prevented the Land Bank from purchasing all of the land offered to it for sale, the government was forced to establish an ordering of priorities. The groups of farmers in order of preference were: farmers who were 65 years or older; farmers between the ages of 55 and 65 who, due to income problems, wished to utilise the capital to improve their family standard of living (farms in this category would be given the opportunity to lease the land back); farmers who were in poor health and therefore unable to effectively operate their farms; farmers who wished to transfer to some alternative type of employment in order to enhance the family's living standard; and, finally, family transfers in which neither the parent nor the son/daughter had sufficient net worth to permit the transfer to take place in such a way that the parents could have a financially secure retirement, and the son/daughter a reasonable level of income (Legislative Assembly of Saskatchewan, 1971).

The government acquired land at prices consistent with established prices in the area and valued by an appraiser. There were four types of sales. With direct-descendant transfers, there was no competition for the lease of the land as long as the son or daughter met the eligibility criteria of the program. Third-party transfers worked the same way, only the transfer went to a specified non-relative. Leasebacks were conditional sales to the Land Bank by the vendor for a cash settlement plus a long-term secure lease, the aim being to help farmers in financial difficulty. Most of the controversy surrounding the Land Bank arose from direct sales which involved land that did not stay within the family or go to a specified lessee, but was placed for competition among prospective lessees. An elaborate point system was drawn up to determine who would be the most desirable recipient of the land. Points were assigned for the applicants' ability to draw up a plan for the development of their farm, their income potential, utilisation of resources, age, vendor preference, disruption of existing farming enterprises, and education and life skills related to farming (Saskatchewan Land Bank Commission, 1974).

To be eligible to lease land from the Land Bank Commission, program applicants had to declare their intention of making or continuing farming as their main occupation during the lease. As well, they had to be Canadian citizens or landed immigrants residing in Saskatchewan at the time of entering into the lease, and not have a three-year average net income of over $10,000 or a net worth of over $60,000 (ibid.).

The program almost immediately attracted a great deal of interest. This was due in part to the fact that in the early 1970s land was very difficult to sell. Because of a lack of capital to invest in land, farmers who wanted to sell out and retire could not find purchasers. Many farmers could not afford to transfer their land to their children. Their retirement income depended on selling their land and their farm could not generate enough income to support two families. As a result, at the beginning of the program, buyers were scarce and the Land Bank became a popular sales opportunity to retiring farmers. Those who for health or other reasons needed to sell their land, could sell to the Land Bank rather than accepting a low price in a private sale or being forced to delay their retirement.

Consequently, in the first two years of operation over 3,300 farmers applied to sell their land to the Land Bank. The budget allowed for less than one-third of this land to be purchased (ibid.).

Criticism from the Opposition

Despite the obvious support from a large segment of rural Saskatchewan for the goals of the government in setting up an agency to facilitate the transfer of farmland, the issue exploded when the Land Bank legislation was introduced in April of 1972. Opposition leader Davie Steuart and his team of Liberals travelled the province waging a campaign that had little to do with logic, but a lot to do with emotion. Steuart touched a raw nerve among the rural population by bringing up images of tenant farming in Eastern Europe—a land-holding system that tens of thousands of people had come to Saskatchewan to escape. Charges were continually laid that the NDP had no intention of ever selling the land that they were buying and that within 20 or 30 years the government could well own all the farm land in the province (SAB Blakeney Papers, R-565-VII-19).

Such reasoning overlooked some key points about the program and the structure of Saskatchewan agriculture. Given that there were over 46 million acres of cultivated land in the province, with an additional 20 million acres of grazing land, the amount purchased by the Land Bank looks very small. The 521,500 acres that the Land Bank owned in 1975 equalled less than 1% of the total land in Saskatchewan. At this rate of acquisition, it would have taken the government over 300 years to buy up all of Saskatchewan's available land.

While by 1975 it was true that the Commission had not sold any of the land back to lessees, Land Bank leases stipulated that farmers renting this land were not eligible to purchase before five years of their lease was up. The five-year holding action by the Land Bank was meant to deter speculators and to give the lessee at least that period of time to develop a stronger farm operation and establish a financial base. This clause meant that 1978 was the first year that lessees were eligible to purchase land (SAB Blakeney Papers, R-565-I-102-B).[3]

Another damaging accusation levelled against the government was that the Land Bank was driving up the price of land by buying out farms at such high prices that other farmers could not compete. But the Commission did not set the market price for land. It paid the average of what other people had already paid for land in the area. When establishing an offer for a particular parcel of land, the Commission's appraisers used three comparable sales of land recently sold in the same area as the land that the government was purchasing. The comparable land had to be of similar soil quality and type, and had to be located within an approximate radius of eight miles from the subject land. The market value of the land was then determined by taking the average of these three past sales (ibid.).

Internal Conflict

Part of the difficulty in selling this program to the general public can be attributed to the lingering internal conflict within the NDP over the direction and development of the program. The split meant that the government was never united in its support for the Land Bank program. Doug McArthur, who was deputy minister of agriculture from 1971 to 1974, says that he could understand the opposition from the Liberals and the Conservatives, but it was the opposition from the Left that most distressed him. It was a program, he says, which had to be sold, and no one seemed prepared to do it. The Left dismissed it as nothing more than a real estate agency, and people on the NDP right, much like their Liberal neighbours, did not agree with any public ownership of land (Gruending, 1990: 110–11).

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[3] Memo from G.H. Wesson to Blakeney, 9 May 1975.

The Waffle and the NFU believed that the Land Bank was little more than "window dressing" for the problems farmers faced. The government, they contended, had lost sight of the fact that farmers had a desperate income problem that required a complete farm policy package where a Land Bank was just one of many elements. They believed that to have any real effect in solving long-term structural problems, the Land Bank would have to be part of an integrated program to increase the number of farm units. This was to be accomplished through specific measures such as setting maximum limits on farm size, initiating a net income policy, providing a universal pension scheme for retiring farmers, and preventing foreign, absentee, and corporate ownership (SAB Waffle Papers).

The program was also strongly criticised by the NFU and the Waffle for not being sensitive to the immediate needs of local farming communities. Land use regulations, maximum limits on farm land, the granting of leases, and other criteria for participation in the program, they argued, were decisions that should be made at the regional level by elected farmer representatives. They believed the province-wide criteria for the program neglected the realities of regional differences. For instance, less land was necessary to earn an adequate living from farming in the fertile dark brown soil area of the west-central part of the province than in the semi-arid southern part of the province. Government policy makers opted instead for a much easier administrative set of province-wide, standardised rules and procedures. Decisions on what land would be purchased and who would receive leases would be made by individuals appointed to the Land Bank Commission by the minister of agriculture (Legislative Assembly of Saskatchewan, 1971: 2076).

Operational Weaknesses

Members of the Land Bank Commission also expressed criticisms of the way the program had unfolded. The Commission's Vice-Chairman, David Miner, believes that the biggest single weakness of the operation of the program was the government's inability to inform the public of the policies and procedures of the Land Bank, the way they worked, and why they had been implemented. Miner maintains that a major reason for the failure of the Land Bank stems from the fact that there was virtually no budget for communications, education and general public image building (SAB Blakeney Papers, R-565-I-102-D).

Other members of the Land Bank Commission are harsher in their criticism of how they believe the government "abandoned" the program. Upon reflecting on his years with the Land Bank, Gib Wesson, Chairman of the Commission, says that, "it's one of those things that when they [the opposition] started saying it was an NDP socialist-communist land-grab—this scared a lot of NDP MLAs, especially the city ones. They said, let's start cutting it off. They could foresee it as being politically against them as a party. We had a few strong rural members who backed it up all the way. But they didn't have enough strength to ensure enough money was put into the program" (1989).

Rudi Sebastion and Bill Hope, Land Bank counsellors, agree with Wesson's assessment that the government abandoned the program. Sebastion is passionate in his claim that "as soon as they [MLAs] found that the program was being criticised they went into a shell. They tried not to mention it. They were scared of it. David Miner offered in both election campaigns to explain to all the candidates the workings of the program. They viewed it as a non-issue. We did not communicate to the grassroots" (1990).

The program was also accused by many people of being an "administrative nightmare." On the one hand, there were more farmers who wanted to sell to the Land Bank than could be accommodated and when offers were made to buy land, there was the inevitable criticism from sellers that they hadn't been offered enough. On the other hand, farmers buying land on the open market claimed that the Land Bank's presence as a potential buyer drove prices up. Virtually all farmers wanted more land, so there was intense competition for it.

But it was the process of selecting lessees that became the most controversial aspect of the program. The Land Bank was easy to attack because of the large number of people who did not win in the competitions for land. By 1975, the end of the NDP's first mandate, the Land Bank program had entered into just over 1,300 lease agreements. Nearly 6,000 farmers had applied to lease this land—meaning that the government was able to accommodate only about 20% of those who were interested in leasing land from the government.

Many people involved in the development, implementation or operation of the Land Bank believe that the problems associated with the allocation of land could have been avoided. Since most of the problems associated with allocating land arose when there was a competition for Land Bank leases, Gib Wesson believes that the government should have restricted the Land Bank to an intergeneration land-transfer program. Jack Messer disagrees with Wesson's suggestion, making the point that in the early 1970s a lot of farmers had no offspring who were interested in farming. "We would have left these farmers victims of the circumstances of the day. There was no market for them so either they would have had to continue to farm—which was a personal, unfair obligation on them—or they would have had to divest themselves to someone else at a very significant loss" (Messer, 1995).

In the initial discussions on how to set up and administer the Land Bank, Messer pushed for a much simpler program which he believes would have avoided most of the political problems associated with allocating land. He argued that no matter how fair the system was, when there was more than one applicant somebody was going to be disappointed. Messer's proposal would have seen those selling the land to the government determining who would rent the land they were selling rather than having a bureaucratic agency or independent party making these decisions. Messer argued that as long as both the seller and the renter met the program's criteria, the same objectives would have resulted, with fewer political problems. Best of all, under such a system, dissatisfaction with the allocation process could not be blamed on the government. The government would be able to say that problems with allocation should be taken up with the person or persons who had sold the land since decisions on the allocation of leased land were arrived at by the two parties involved in the process: the seller and the lessee. The government would only act as the facilitator. Messer claimed that "this single decision allowed for the criticism of the Land Bank program to reach a level that brought about its eventual demise" (1995).

Return of Prosperity

Operation of the Land Bank program was also affected by the return of agricultural prosperity to the farm community. Wheat that was selling at $1.30 a bushel in 1971 was selling at $5 two years later. There seemed to be no limit to the prosperity of the grain economy. Farmers expanded their operations by purchasing land in a market that reflected this optimism. This period changed all the equations on farmland and had a profound effect on the Land Bank's ability to continue to grow and function as an effective land-transfer agency. Between 1973 and 1978 the Land Bank's average purchase price almost tripled, from $54 to $143 per acre. These figures underestimate the real situation, because in 1976 the commission stopped making offers in regions where prices were most buoyant. In some areas, land, which could be purchased for $100 an acre in 1970, sold for three to eight times as much by the end of the decade (Gruending, 1990: 109).

As a logical result, funding for land purchases were never able to keep pace with the increase in land prices. For example, approximately 170,000 acres were purchased for $9.3 million in 1972. Buying the same amount of comparable land in 1980 would have cost $52 million. The 1980 budget for land was $25 million. This meant that less land was available for lease while the demand for participation in the program continued to increase. Because of the need to prioritise vendors, the scope of the program eventually became limited to family transfers and the most serious cases of financial difficulty. The number of people applying to lease land from the Land Bank remained high during this period, demonstrating that many small farmers wished to expand their operations by leasing, rather than purchasing land, and that young people still desired to enter farming. Many farmers, however, felt this was the opportune time to expand their operations by purchasing more land. As a result, farmers wishing to retire had no problem finding buyers for their land. The necessity for the Land Bank to act as a vehicle for farmers to exit from the industry declined as a result of the renewed activity in the land market (SAB Blakeney Papers, R-1106-III-I-R).

Other problems also emerged because of the move from a period of recession to a period of affluence. The government stood to realise a big capital gain if farmers chose to utilise their option to purchase the land they were leasing. People who thought it was all right for farmers to make money that way did not think the government should be doing it. On the other hand, if the government would have sold the land at 1973 prices, the lessees would have received a windfall capital gain and this would have been sure to incite increased envy and anger among neighbours who had applied for land and been refused (Gruending, 1990: 109).

As it turned out, when 1978 came around, the rush for Land Bank tenants to purchase their land back from the government was not as great as publicly anticipated. Of the nearly 300 lessees who were eligible to purchase their land in 1978, only around 10% chose to do so.

The Land Bank operated until the government was defeated in 1982. After that, no new leases were entered into. For a while, the future of the Land Bank tenants was very uncertain. In response to what they considered to be an emergency, the Land Bank Tenants Association, which had been formed a few years before the collapse of the NDP government, but had never played a very active role, took on an important new life. The membership lobbied the new government members, pleading with them not to break the leases that they had entered into under good faith with the previous administration. Dan Danielson, the president of the Land Bank Tenants' Association, believes that it was only because of the demonstration of strength shown by the organised tenants and because of the fact that people from all political stripes belonged to their organisation, that the Land Bank tenants were allowed to continue to lease their land from the government.

Existing leases were transferred to the Lands Branch and the terms of their original contracts remained virtually the same as they were prior to the change of government. Tenants maintained their right to transfer their lease to their children once they reached mandatory retirement age, and continued to enjoy a rental rate which was slightly better than they would be paying if they were leasing land from the private market (Danielson, 1993).

The Land Bank owned some 1.195 million acres as of December 1982, for which it had paid about $150 million. Due to the dramatic rise of land values in the 1970s, the market value had grown to $500 million. The Land Bank Commission was disbanded and the Conservative government established a Farm Purchase Program to replace it. The program provided financial assistance to farmers who were borrowing money through the federal Farm Credit Corporation to purchase farmland (Pitsula and Rasmussen, 1990: 45).

The NDP's Land Bank and the Progressive Conservative Party's Farm Purchase Program represented two fundamentally different approaches to the same problem of how to transfer land between generations and how to provide the means for young people to enter farming. Neither program achieved its stated goals. The number of farms declined during both the Blakeney and the Devine government's terms of office and has continued to decline into the Romanow government's administration.

Conclusion

The government achieved only mixed success in accomplishing the goals and expectations that it originally outlined to the public when it set up the Land Bank Commission in 1972. The Land Bank was the centrepiece of the NDP's campaign promise to maintain the maximum number of family farms and to revitalise rural Saskatchewan. The program was successful in putting more young people on the land and providing a means for older farmers to retire.

For the individuals able to participate in the Land Bank program there was a high degree of satisfaction. Especially in the first few years of operations when land prices were in the doldrums, the Land Bank was viewed favourably by an ageing farm population that was having difficulty selling its land and being able to retire. Despite a tremendous negative publicity campaign waged by opponents of the Land Bank, interest by retiring farmers who wished to sell land to the government and individuals who wanted to rent Land Bank leases remained high throughout the ten years of the program's operation. Successful lessees were happy with a program that allowed them to lease land on a long-term, secure basis at rates below the cost of renting land on the open market and very few chose to exercise their option to purchase the land back from the government.

As an instrument for intergenerational transfer of farmland, the Land Bank played an important role. In its ten years of operation the Land Bank helped to establish close to 4,000 young farmers on 1,195,882 acres of farmland. If any criticism can be laid on the program it is that it helped only a small segment of the population that was in need of a vehicle or mechanism to help transfer assets between generations. The government was able to accommodate only 30% of over 12,000 farmers who applied to lease land. As a result, the Land Bank proved to be a very popular and effective, but limited, alternative.

The government was only partially successful in achieving the goal of creating a new system of land tenure in the province. Since lessees had the option to purchase the land they were renting from the government, and since purchase of this land was expected and even encouraged by the government, the Land Bank program was not structured in a way that could bring about a change in the land-tenure system. When the Land Bank was created in 1972, renting land was already an established and accepted part of Saskatchewan farming practices. The Saskatchewan Land Bank was simply an extension of leasing options and rather than establishing a permanent pool of publicly owned land, it was designed to help young farmers achieve ownership in stages. The premier, and others, believed that the desire to own land was so strong that lessees would choose to purchase the land as soon as they were in the financial position to do so. After five years of leasing, the government expected that the lessees would purchase the land back and that there would be a pool of money available that could be used to keep the program going. As this study shows, very few lessees chose to purchase the land they were renting from the Land Bank. The conditions of the leases were better than any lease they would be able to get on the open market. It is largely a measure of the success and acceptance of the program that very few lessees chose to exercise this option. As Allan Blakeney notes in retrospect, this was a flawed assumption. It made sense, he reflects, that farmers would keep the land bank leases and would expand their land base by purchasing other land that came up for sale. It would not make sense to purchase land when they had a long term lease which they could pass on to their children once they reached 65 (Blakeney, 1994).

The government was also largely unsuccessful in achieving its goal of slowing down the depopulation of rural Saskatchewan. The number of farms dropped by nearly 10,000 in the period from 1971 to 1981—down to 67,318 in 1981 from 76,970 in 1971. The rate of decline in rural Saskatchewan during this period was somewhat lower than it had been in previous years. For instance, farm numbers dropped by nearly 17,000 in the period from 1961 to 1971, over 18,000 from 1951 to 1961, and almost 27,000 between 1941 and 1951. How much this slower rate of decline had to do with the policies of the NDP government, and how much it had to do with the rise of commodity prices, is unclear.

As a public relations exercise, the government also clearly failed with this program. The Land Bank was a program that needed to be sold and very few people aside from the commissioners and people hired to administer the program, and participants of the program, were willing to do this. Proponents maintain that one of the most serious flaws in the program was that there was no budget for communication and public education to promote the benefits of the program and to counter the many flawed criticisms that were levelled against it by opponents. Many of the criticisms of the Land Bank program were unfounded. One of the most damaging accusations was that the Land Bank Commission drove the price of land up. This was not the case. The government paid fair market value based on an average of three comparable sales. Opposition parties were also successful in leaving the impression with the public that the government had no intention of ever selling the land to lessees. This is despite the fact that Land Bank leases very clearly stipulated that after five years lessees had the option to purchase this land from the government.

The way the program was set up also led to many serious problems. The government can be commended for designing an allocation process that was largely free of political patronage and whose elaborate selection process and appeal board mechanisms ensured fairness in the allocation of land; however, the sheer volume of people applying for Land Bank leases ensured much disappointment and disgruntlement. Minister of Agriculture Jack Messer's original push for the government to stay out of the allocation process is one way many problems could have been avoided. The Waffle and the NFU believed that many of these problems could have been addressed if the government had established regional, elected boards to make allocation decisions and to decide criteria for applicants. In this way, any criticisms of the allocation process could be placed on regional board members instead of the government. Both of these alternatives might have enabled the government to deflect criticism arising from the allocation process to a third party.

We should also not underestimate the effect that returning prosperity to the prairies during the mid-1970s had on the ability of the Land Bank to grow and function as a successful land transfer vehicle. The price of land dramatically increased and the government was unable to purchase enough land to keep pace with the demand for lease land.

When the NDP lost the election in 1982 the new government moved quickly to dismantle the Land Bank program. There still remains approximately 800,000 acres of Land Bank land leased through the Lands Branch of the Saskatchewan Department of Agriculture and Food, representing nearly 2,000 leases (McKay, 1999). The problems that prompted the NDP to implement the Land Bank program in 1972 remain unresolved in Saskatchewan, and many other places throughout the world. The Land Bank program represented a spirited experiment to grapple with some of these problems. While the Land Bank failed to accomplish all of its goals, it remains an important chapter of agricultural history that should not be forgotten as policy analysts and politicians grapple with new ideas to solve the problems in the way agriculture is structured.

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Proposal for a Non-equity Co-operative Farm Model

Bev Currie

In spite of its short history, Saskatchewan has a lot of experience with co-operatives. Arguably, it is unmatched in North America in its degree of acceptance of "the principle and organisational forms of co-operation as a way of adjusting to economic difficulty" (Bennett and Krueger, 1968: 351). The initial effort centred around organising grain handling and marketing co-operatives such as the Grain Growers Grain Company in 1906 to resist the sharp practices of the line elevator companies and the railway. Similarly, consumer co-operatives were started by farmers to reduce input costs and grew dramatically in the urban consumer market as well during the century. But less well known have been the efforts by farmers to establish production co-operatives.

The Harmony Industrial Society founded "Harmona" colony, a co-op farm in the Qu'Appelle Valley near the Saskatchewan-Manitoba border in 1895. Based on Millenarian objectives, the intention was to establish a "co-operative way of life" by living and working together and drawing sustenance for the 10 families from collective farm work. But the harsh environment, the co-op's small membership and the fact that the railway bypassed the settlement all reduced the co-op's viability and it was dissolved about 1900 (Wright, 1956: 165). This was only an early example of many co-op farms organised over the course of the century. Some involved co-operation around a specific farm activity, such as grazing co-ops that developed and shared access to pasture land among livestock farmers and ranchers, and machinery co-ops that reduced the input costs for expensive machines by sharing them among several farms. Others involved a more "complete" form of co-operation in which all of the productive resources, including the members' own labour, were pooled and their use was co-ordinated by the co-op.

Often the families of the co-op's members would live in a central place, in housing provided by the co-op.[1]

Ten of these more "complete" co-op farms were organised in the decade after World War II by war veterans using veterans' land grants for their initial equity in the co-op and receiving concerted organisational support from the Saskatchewan government. But by the early 1950s, two of the ten farms had dissolved and another was downgraded to a machinery co-op. Since then, all ten have disappeared, although others have started. The Saskatchewan Royal Commission on Agriculture and Rural Life (1954) attributed a weakness in the way that productive equity was organised in the co-ops. For example at the Matador and the Beechy co-op farms, each veteran received 320 acres which he leased to the co-op subject to purchase in 10 years. If a member withdrew, the co-op would likely suffer an equity "crisis." Indeed not knowing if members were going to withdraw made production decisions and even personal relations in the co-op difficult.

We can recognise in the Royal Commission's comments that the history of production co-operatives has spawned a lot of debate about their viability in both local and academic circles. Since they were associated with the Co-operative Commonwealth Federation, the social democratic party in Saskatchewan that took power in 1944, opposing politicians billed co-op farms as the introduction of communism to the countryside, patterned on the Soviet model of collective farming. Lipset too saw them as an example of "agrarian socialism." Cooperstock's study (1968) for the provincial Department of Co-operatives also saw them as political and economic islands in the midst of a culture that emphasised individualism and private ownership. For Cooperstock, the members' lack of prior socialisation in co-operative ways presented the major stumbling block for co-op farm viability. But others doubt that the Saskatchewan co-operative phenomenon was ever "socialist" or anything more than a manifestation of agrarian pragmatism (Bennett and Krueger, 1968) and that co-op farming, which might have pushed co-operation to more radical limits, was actually never particularly viable since it flew in the face of the inherent enthusiasm for family farmers to own property.

While each of these views has an element of truth, none seem compelling. It is true that co-op farms were not necessarily "socialist" in the sense that they were organised as survival strategies for farm families within the dominant capitalist economy, but they certainly challenged the individualism of capitalist relations more fundamentally than other forms of co-operation. Many members belonged to these co-op farms because they were committed to co-operative principles and wanted to participate in developing alternate forms of agriculture. If we expect co-operative "experiments" to fail because the potential members have not been properly socialised, there would be no co-operative movement. The point of this effort was, and is, to resist, an activity which must offer its own opportunities for learning, constructing knowledge and developing skills.

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[1] In this article, different types of co-ops are identified as follows:

- Machinery co-operative, sometimes called "agency co-op," refers to a type of co-op where the machinery is owned by the co-operative and all the other assets are owned by the individual members. The members usually share the income and the expenses in proportion to the amount of land they own which is farmed by the co-operative (some of their land may not be included in the co-operative). The co-operative may use a productivity quotient to "equalise" land of differing productive capacities.
- Farm co-operative, or (full) co-op farm, refers to a farm where all or most of the assets, at least the machinery, livestock and farm buildings, are owned by the co-operative. The land may be owned by the members or leased from third parties.
- Agra-Pools are machinery co-ops that also own livestock, some land and buildings and may also rent some land from third parties.

Finally, it is the case that family farmers both own productive property and do virtually all of the labour on their farms themselves. But it may be unnecessary to claim that they therefore need be fundamentally committed to property. Property offers two things to farm families: first, a certain security of tenure and second, the opportunity to accumulate wealth. For many farm families, security of tenure, far outweighs the need to accumulate. Nevertheless, as long as family farming is thoroughly integrated with capitalist markets and capitalist dynamics as it has been in Saskatchewan during this century, then the need to accumulate underpins security of tenure, since if a family farm does not grow larger it will soon be "gobbled up" by neighbouring farms that are growing. But there are contrary examples. For many years, ranchers in the province, as elsewhere, have concentrated their assets in livestock with the land being largely provided by long-term Crown leases. Also, many farmers have rented rather than owned large portions of their farm land. Apparently there is not the necessary psychological "attachment" to land among many farmers and ranchers that is often attributed to them. Finally, and perhaps more importantly for this paper, if one is to develop an alternate form of farming, it will be necessary to challenge the relation between family farming and property.

Co-op farms after World War II usually did not adequately deal with the issue of property. The Royal Commission correctly observed this weakness. But many co-op farmers knew it too. For example, members of the provincial Federation of Production Co-operatives (FOPC) have over time come to understand that co-operative farms have the same problems with inter-generational transfers as any other kind of farms. Most co-operative farms seem to die when the original members decide to retire.

With this in mind, the FOPC developed a plan for a new type of Co-op farm that seemed to have a better chance of surviving through several generations. It should be noted that this plan was developed in the 1970s when the Saskatchewan Land Bank was in operation.

The Proposal in Brief

The Federation of Production Co-operatives was promoting and assisting in the development of an innovative form of co-operative farming that would help to eliminate some of the problems that exist in Canadian agriculture. A few of the critical problems addressed by this proposal are: (1) land tenure and the farmers' dependence on appreciation of values for their security at retirement; (2) the underutilisation of the productive potential of Saskatchewan farm land, with particular regard for its ability to support more people in farm communities; and (3) the ever-increasing concentration of farm assets into fewer hands.

To address these problem areas the FOPC took on the task of designing a structure for a "model" co-operative farm in which committed people who want to engage in group farming might do so with limited capital accumulated in the farm. As well, the members would be compensated in wages, fringe benefits, and a share of the profits at a level that would be commensurate with their work and contribution to the farm (FOPC, 1975).

The structure of this type of co-operative farm would differ from a traditional co-operative farm in several respects. The ownership of the farm assets would not change each generation, as is generally the case with family-owned farms or traditional co-operatives. This co-operative farm, as an entity, would continue in perpetuity and no periodic revaluation of its assets would be taken to further the equity or investment interests of its members. Further, the main criteria for judging the success of the co-operative farm would be: (1) productivity rather than accumulated net worth; and (2) the quality of social and economic life it provides for its member families through their lifetimes.

The Proposal in Detail

The Main Agencies to Be Involved

The Federation of Production Co-operatives, which was organised in 1949, has drawn its membership from machinery, "agra-pool" and farm co-operatives in Saskatchewan. All co-operatives that comprise the membership of the Federation have been incorporated under the Federation of Production Associations Act. The aim of the Federation is to promote and assist in the development of co-operative social and economic ideals. The members of the Federation believe in the self-help approach to problem solving. The members believe that co-operation can be a solution for the social and economic problems facing the agricultural industry. As farmers in production co-operatives, they feel that their group action provides benefits which individual farmers do not necessarily enjoy.

The Saskatchewan Land Bank was created by provincial legislation passed in May 1972, and lasted for almost two decades. As an arm of government, it was administered by a three-member commission advised by a dozen local committees composed of farmers and representatives of farm organisations. Local Land Bank counsellors resided in the sub-districts to administer the programme which consisted generally of purchasing land and leasing it back either to members of the seller's family or to other applicants selected on the basis of an elaborate point system designed to establish young farm families on the land (see the article by Lynn Gidluck elsewhere in this volume). Clearly the Land Bank had considerable potential in facilitating the generational transfer of farms.

The Co-operative Farm Model

The Land Bank Commission would own the land and the buildings required for productive purposes. These facilities would be leased to the co-operative farm on a perpetual basis. The terms of the lease would be the sole responsibility of the Land Bank Commission. However, the terms of the lease must *not* include an option to purchase the land.

The Federation would acquire the machinery, the implements and other equipment required by the co-operative farm. The requirements for the machinery, implements, and miscellaneous equipment would be determined by the co-operative farm in consultation with the Federation. The Saskatchewan Land Bank Commission and the Saskatchewan Department of Agriculture could also be called upon to assist in determining the machinery requirements. Maintenance and insurance of these assets would be the responsibility of the co-operative farm.

The co-operative farm would then lease the machinery, the implements and the miscellaneous equipment from the Federation. The repayment terms of this lease would be designed to ensure a recovery of all costs incurred by the Federation, in obtaining and financing this equipment. When the full costs to the FOPC had been recovered the rental fee could be eliminated or alternatively merely reduced in order to build up a fund for machinery replacement or expansion.

It is the intention of both the members of the co-operative and the members of the Federation that the co-operative farm become as diverse as possible. It is conceivable that the farming activity might include traditional areas of production such as grain production, hog production, a cattle feeding operation, or a dairy operation, along with other non-traditional activities such as beekeeping or alfalfa production.

Several options are available regarding the ownership of member housing. To avoid equity problems at retirement the members themselves should not own their housing. The Land Bank Commission could own the buildings with the cost of these assets increasing the annual lease fees paid to the Land Bank Commission. Or the Federation could own these assets with their cost increasing the annual lease fees paid to the Federation. If the Federation initially owned the members' housing, an agreement could be made between the Federation and the co-operative for an orderly transfer of title of ownership from the Federation to the co-operative. The members of the co-operative in any one of these situations would pay rent for the personal use of these facilities.

If the housing is to be constructed by the members of the co-operative (akin to the case of a home-building co-operative) alternative methods are available for payment of construction labour to the members. A salary or wage could be paid. Alternatively, the construction labour costs, if unpaid, would reduce the total cost of the housing. This, in turn, should reduce the annual lease fees applicable to these assets. There is a negative side to the co-operative actually owning the housing which needs to be avoided. The membership could over time build up a large equity in housing which would have to be paid to the members upon retirement.

Initially, the Federation would provide the working capital requirements of the co-operative farm. The co-operative farm would ultimately be expected to provide its own working capital, and this will necessitate the members lending the co-operative farm funds to be used for working capital purposes. However, such loan capital supplied by the members would not be considered as equity; loan capital would be shown as a liability by the co-operative farm. Working capital requirements would be determined initially by the study group developing the co-operative farm model. Working capital requirements on an ongoing basis would be determined by the co-operative farm in consultation with the Federation.

To get the co-op started, the Federation would open a current account to establish a line of credit in the name of the co-operative farm. These funds would be made available to the co-operative for working capital purposes. As the co-operative farm generated its own working capital, the amount of funds provided by the Federation would be reduced. At some point in the future (determined in the feasibility study) the co-operative would be providing all of its working capital requirements from its own membership and its own production.

Members of the co-operative would be required to make a contribution from their yearly personal earnings to a member equity account. (When this proposal was first made in the 1970s the suggested figure was 10% of yearly income to a maximum of $1,000 per year.)The purpose of this yearly allocation would be to establish a reserve for the repayment of outstanding indebtedness of the co-operative in the event of receivership or bankruptcy of the co-operative. This member equity account would constitute the member's total equity in the co-operative. The member would have last call on these funds.

Member's equity would be repaid in full should a member leave the co-operative. The member's share equity would not, however, be repaid immediately upon withdrawal or retirement. Member's equity would be repaid in yearly instalments (such as five annual instalments).

Member repayments at the time of withdrawal or retirement would be limited to the member's equity in the reserve fund (there being no member equity in capital assets) at the time of withdrawal, and the member's share of total co-op farm income (including unsold inventory) in the year the member leaves, which would include: (1) the member's portion of the surplus for the year the member leaves; and (2) the member's portion of accrued revenue less the accrued expenses for the current year. It is important to note that no repayments would be based upon inflated (or deflated) values of any of the assets of the co-operative.

All record keeping, accounting, budgeting and financial forecasting would be done by the co-operative in consultation with the Federation. Assistance in this function would initially be available through the province's Department of Co-operation and Co- operative Development, the Department of Agriculture or the Land Bank Commission. Record keeping and accounting must be designed to ensure that all transactions of the co-operative are properly recorded. Budgeting and financial forecasting must be done to ensure that a coherent and feasible plan of action, for all farm activities, is followed by the co-operative.

The Land Bank Commission should initially recommend the most productive uses for the land base. The Federation and the co-operative farm would then develop the land and resources pursuant to the Land Bank's recommendations and subject to financial and technological constraints. Financial constraints would normally be the amount of funds available to pursue a particular activity. Technical constraints are those constraints imposed by the expertise of the members of the co-operative. The Land Bank Commission, the Department of Agriculture and the Federation would provide technical assistance in the development of production processes.

The members of the co-operative would provide the labour services to the co-operative. It is expected that no labour will be required from outside of the membership. Training of members would be the responsibility of the co-operative in consultation with the Federation.

The members of the co-operative would also provide the management services to the co-operative. Management assistance, where required, would be provided by the Federation along with such other agencies as the Federation deems desirable.

The members of the co-operative farm would be paid an advance on the farm's annual surplus not less frequently than monthly. In the first year, this advance would necessarily come from funds loaned to the co-operative by the Federation. In the second and subsequent years, this advance would come from surplus funds of the co-operative farm and/or the Federation. In every year, adjustments would be made at year-end to the monthly advances to the member. Members of the co-operative would also receive the standard, accepted, employee benefits such as sick leave, holidays (statutory as well as annual vacation leave), pension plan benefits, and so forth. These payments would be recorded as operating expenses of the co-operative and would be paid prior to the distribution of any yearly surplus from the farm's operations.

The study group developing the initial plan for the non-equity co-operative farm must determine the livestock and poultry requirements of the co-operative farm. The co-operative farm would determine these requirements through ongoing consultation with the

Federation. The intention would be to have a well-diversified farming system. The basic herd would be owned by the Federation and leased to the co-operative. The repayment terms of this lease would be designed to ensure a recovery of all costs incurred by the Federation, in obtaining and financing the livestock. Once the financial costs have been recovered by the FOPC, the basic herd could then be leased free or alternatively a small fee could be charged to start a new farm or expand an existing one. A similar program could be organised to develop the farm's poultry flock.

The co-operative farm would own all of the inventories of raw materials and the commodities that it produced. These inventories might include such assets as grains, feeds, fertilisers, chemicals as well as livestock with the exception of the initial basic herd.

Initially, the Canadian Wheat Board Permit Book that is required to sell grain would be in the name of the co-operative farm with a suffix to the Federation. The suffix would be deleted from the permit book when a complete transfer of all assets owned by the Federation had been made to the co-operative.

Sales of other farm products, not including grains, would be handled by the members of the co-operative in the name of the co-operative and the Federation. As with grain, the name of the Federation would be deleted when a complete transfer of all assets owned by the Federation had been made to the co-operative.

Member commitment to the co-operative farm must be on a yearly basis. Should a member leave the farm operation during a given year, the farm may hire labour to replace the departing member. The co-operative farm may authorise the payment of this additional labour expense from any payments owing the departing member(s).

Advantages and Disadvantages of a Non-equity Co-operative Farm

Co-operative farms patterned after the above model offer a method whereby farming becomes less effected by the characteristic swings in asset values and by speculation. At the same time, it provides the opportunity for young families to farm without the need for initially raising the substantial amounts of capital that are currently required. The point of the proposal is to sever, or at least blunt, the link between their ownership of farm property with the well-being of farm families. This link has led to the concentration of farm resources, low and unstable farm incomes, and it makes generational transfer difficult leading ultimately to declining numbers of farm families. The proposal does not completely block the equity "connection"; members of a co-op farm could still collectively decide to capitalise their annual incomes into machinery, livestock and higher levels of off-farm inputs. But removing the need for equity in land, and making the co-operative itself, rather than the individual members, the owner of most of the equity, will reduce the tendency to see the need to increase equity as the sole measure of a farm's success.

Further, under this plan, the Federation is able to act as a resource to a number of non-equity co-operative farms at various stages of development while ensuring that ultimately each co-operative will become totally independent. This is an innovative approach to farming, adopting the most efficient use of land through diversified forms of commodity production, including the potential for a co-operative home building program, on a continuing basis. It increases the likelihood of each farm's success by spreading the risk to some extent. It also involves a wider network of knowledgeable and concerned people to advise and support the new families as they begin farming.

There are also disadvantages. For one thing, this type of association does not allow for members of the co-operative to immediately withdraw all of their equity capital. Of course for young families the amounts would be quite small, but for retiring families who had been required to put a portion of their income back into the co-operative's reserve fund each year, the amounts could be sizeable. This confirms the need for the co-operatives to pay pension benefits and to work with their members to plan for retirement income.

The proposal also relies on the provincial government, in particular the Land Bank, to finance land equity. In fact, Saskatchewan governments in the 1980s and 1990s pretty well demolished the Land Bank and they seem unlikely to revive it. Of course one point of this proposal is to advocate for a land bank and to show one way that it could be very effective in changing the direction of farming and rural life. Also, there are land "trusts" being created, and once these are on a sound financial footing, they could perhaps play the same role for non-equity co-operative farms as the Land Bank plays in this proposal.

Conclusion

The history of co-op farms, as well as conventional family farms in Saskatchewan shows, in part, that the ownership of property can raise serious problems. Farm families come to depend upon the appreciation of equity values for their security at retirement and this hampers generational transfer and re-establishing young farm families on the land. With farm families having to capitalise their incomes into farm equity, particularly land, in order to compete with their neighbours and survive, it means that more productive uses for this wealth are foregone. It also means that farm families' incomes are typically low. Further, the conventional pattern of ownership of farm equity is one of increasing concentration in fewer and fewer hands. Indeed it appears that equity ownership is both fundamental to family farming and a source of its own demise.

Clearly we need an alternative. The proposal presented by the FOPC attempts to blunt the importance of private ownership of farm equity. It is offered as a strategy for resisting the current trends. Certainly prairie farmers are practical, and they have been deeply socialised in individualism and the ways of the market society. But faced with the extinction of farming as a way of life, and possibly with the destruction of the environment, farm people have and will consider alternative strategies. The task is to make history.

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The Nebraska Center for Rural Affairs' Land Link Program

Marty Strange, Nancy Thompson, Allen Prosch
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Organizational Structure of Land Link

Land Link is a project of the Center for Rural Affairs, located in Walthill, Nebraska. The Center is a private, unaffiliated, non-profit corporation founded in 1973 to promote rural development. Its research, grassroots education, and advocacy work focuses on state and federal policies, such as tax, credit, commodity, and agricultural research policies affecting family farms. The Center also conducts ongoing demonstration projects with farms in Nebraska exploring strategies for resource (particularly energy and water) conservation and technologies appropriate for a more sustainable agriculture. In the last three yeas, the Center has developed strategic services which provide direct assistance to rural people and communities.

Land Link was begun in the fall of 1990 to respond to the Center's continuing concerns that we are moving, perhaps racing, toward a time when the number of people leaving agriculture so exceeds the number of people entering that few efforts will be effective in halting the decline of rural communities.

Land Link started with two assumptions: that there is a significant number of families who would enter agriculture if they were given the opportunity to do so; and that there is a significant number of people owning or controlling farmland or other capital who, if given the opportunity, would use those resources to assist beginning farms. Both of these assumptions rejected the conventional wisdom that the economic problems of the 1980s had soured everyone from wanting to be a farmer and that all landowners were concerned only with getting top price for their farm. Land Link's goal was to establish new farming businesses rather than allow the land and other assets of retiring farms to be absorbed into larger, already established units. Its strategy is to link these beginning and retiring farmers.

The creation of Land Link is not an acknowledgment that the primary responsibility for promoting new opportunities in agriculture lies with anyone but state and federal governments. If Land Link ever became a policymaker's example of a "thousand points of light," the project would probably be terminated. Public policies create choices on who in our society will receive assistance. Current policies, especially many state tax and economic development laws, and federal commodity programs favor wealthier more established farmers and businesses over farmers of more limited income and resources. Until these policies are altered, beginning and other family farmers will continue to be at a disadvantage.

While Land Link should not be used to justify government abdication of responsibility, there is a role for non-profits and other organizations in directly fostering new opportunities in farming. Dozens of options exist for organizations or governments interested in facilitating the transfer of farm assets from one generation to the next. Some suggestions for possible programs are provided in Section 3.

The Center chose to develop a project that would directly intervene in the existing farmland market and create opportunities for beginning farmers that would not otherwise exist in the current market structure. Nearly a year of planning went into the Center's development of Land Link. Five distinct but integrated components were developed: a clearinghouse, training workshops, a realty service, finance fund, and a planned-giving component. Each will be discussed in detail below.

Legal and Tax Implications of Land Link

One of the aspects of Land Link's strategy is to provide fee-based realty services within the context of a non-profit's charitable purpose. This raised two issues for the Center. First, under what circumstances could a non-profit organization raise income from services and second, what legal requirements needed to be met to provide the specific realty services that were to be central to the Land Link effort? Both of these questions need to be addressed by any non-profit organization contemplating similar activities. Substantial income from an unrelated business (defined below) could affect a non-profit's status as a tax-exempt charity and could affect its eligibility for private foundation grant support.

Any non-profit considering providing services for a fee must decide whether it will be subject to "unrelated business income tax." Unrelated business income is defined as income from a business that is regularly carried on but is not substantially related to the exempt purpose of the organization. In general, a business is related if it contributes importantly to the organization's exempt purpose, but several factors are involved in determining whether a business is related. These can include whether the scale of the business is in proportion to an exempt rather than a for-profit purpose, whether the fees charged are based on the ability of the service recipient to pay, whether the service provided is commonly furnished by for-profit entities, the extent to which information and training is provided, and the class of intended beneficiaries of the service.

The Center determined, after consulting legal counsel, that Land Link is clearly related to its exempt purpose. Land Link provides training to beginning farmers, furthers the Center's environmental and economic goals through the promotion of sustainable agriculture and new opportunities for beginning farmers, and revitalizes rural communities by creating new farm businesses.

The second legal issue to be confronted was how to provide the realty functions central to Land Link's strategy. In Nebraska, a real estate broker's license is required to provide any farm management or other real estate services. Even the Clearinghouse, which simply matches names of beginning farmers with landowners from a computer database, was felt to be sufficiently close to providing "brokerage" services that a license was needed. Whether groups in other states would face the same requirement is unknown but getting an opinion from the state real estate commission is advised.

The Center could have contracted with a private broker to provide the services of Land Link but instead felt it was preferable to develop this capacity within the Center staff. This permits closer supervision and accountability and gives the Center more flexibility in deciding future directions of the project. The leader of the Land Link project obtained a broker's license in April 1991 and the Center made him the designated broker for the project. Land Link Realty was also registered as a trade name of the Center for Rural Affairs.

Land Link Components

Land Link Clearinghouse

The Land Link Clearinghouse is a computerized database that matches beginning farmers with landowners willing to help a new family start an operation. The first step in the process is to have either the beginning farmer or the landowner complete a questionnaire that solicits basic information about the type of operation sought or the type of farm owned. The beginning farmer is asked about housing needs, experience in farming, willingness to move, interest in purchasing or renting land now and in the future, available farming assets (e.g., machinery or livestock), interest in purchasing machinery or livestock currently on the farm, type of rent desired (i.e., cash, crop share), planned conservation practices, and interest in working into an operation.

The matching is done by examining the primary uses of a particular available farm. Because there are far fewer farms available than beginning farmers wanting to farm, selection is done by matching all beginning farmers to an available farm rather than matching a beginning farmer to all the farms available. To do a match, a brief description of the available farm is first put together. From this description, the primary use or uses (such as primarily corn base, dairy, farrowing, wheat base, etc.) are identified. Starting with the most predominant use and always looking for a positive match with the beginning farmers, a search is run by the computer. The operator then moves to the second most predominant use, the third, and so on, to narrow the search to a closer match. Care must be taken not to attempt a too-perfect match because this could eliminate beginning farmers who are interested in many types of farms. Also, rarely is a search done to eliminate names of beginning farmers *who* have said they do not want to relocate. Land Link lets the beginning farmer decide whether a farm in another state is too good to miss. As a result, searches have resulted in names of 5 to 90 beginning farmers for an available farm.

The farm description and the owner's address and phone number are sent to the beginning farmers, who are supposed to contact the owner if they are interested in the farm. The owner is sent a copy of the description and the names and addresses of the potential beginning farmers who were "matched" to the farm. The sorting and matching for a farm is done once a month with names of new beginning farmers until a link is made by the owner. A $5 service fee is charged to each beginning farmer and landowner when they have been sent their first list of matches. Subsequent matches are free.

Many "matches" have been made since the program began. The landowners in the pr gram have been surveyed and generally express broad support for the program and its co cepts. Many are concerned about the lack of experience of some of the beginning farme who have visited them. The landowners also fear the beginning farmer's ability to operat successfully with little or no capital investment but the landowners are still very interest ed in trying to help them get a start. The types of matches that have resulted in a ne farming venture are varied. Some are simply employment arrangements coupled with th opportunity for the beginning farmer to use a landowner's machinery or livestock facilitie for their own operation. Others involve gradual ownership acquisition of farm assets by th beginning farmer or straight crop share lease arrangements between a beginning farme and landowner.

Starting Out Right Workshops

The Starting Out Right workshops were developed to give beginning farmers a overview of some of the issues faced in starting and operating a farm. Center staff provid ed the instruction and participants were recruited separately from the Clearinghous process. The topics covered in these workshops include:

> *Family goal setting*—Establishing both personal and business goals are keys to beginning a new farm operation. The workshops used materials developed by the University of Nebraska to help families identify a process for obtaining the goals they have set for themselves. The workshops started with a goal-setting example followed by discussion about why goals should be formally created. Participants complete the forms as a family and then discuss them at a future meeting.
>
> *Financial management*—Record keeping, cash flow planning, and analysis of investment returns are fundamental skills needed by every farmer but particularly for those just starting out. Strategies for low capital start-ups are discussed to analyze specific returns on investment including labour and other non-capital items. Traditional analysis of rates of return normally measure return for only the first year and sometimes use regional averages for labour and other non-capital items. The workshops begin by discussing why records are important in decision making, particularly records on production volume and cost and financial record keeping. Different systems for record keeping and tools for analyzing financial performance are reviewed.
>
> *Sustainable agriculture practices*—Soil and water conservation practices, protection of groundwater quality, alternative energy uses, drought strategies, and soil-building strategies are all issues beginning farmers should address. Unfortunately, even though sustainable agriculture strategies, that emphasize labor and other low-capital inputs, are particularly suitable for beginning farmers, they are rarely taught by traditional institutions. This narrow vision of farming feeds the belief by many that it is impossible to begin a farm or make a living at farming without a great deal of capital. Workshops on these topics provided examples of successful low input–low cost operations and worksheets were provided so participants could build individual plans using various options. Farm tours and guest speakers also allowed contact with farmers practicing some of the concepts discussed.
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> *Integrated farm management*—integrated crop and livestock management, diversification of risk, and crop rotations are important aspects of managing the farm as a whole, rather than its individual enterprises. These sessions used the Resource Audit and Planning (RAP) Guide, developed by the Center. The RAP Guide is a workbook that helps the

> farmer identify resources, understand how a farm's enterprises fit together, and plan to manage the farm as a whole. The Guide is a good tool for helping beginning farmers "start out right" in planning their farm. The workshops include activities to identify as many interrelated farm enterprises as possible followed by discussions on how these parts can be used together more effectively, what management burdens are created, and how the burdens can be overcome.

Land Link included these beginning farmer workshops as one of its components because there was no other source of training that dealt with low-capital strategies for getting started in farming, sustainable agriculture practices, and basic financial management skills. However, this situation may be changing. The 1990 Farm Bill requires that all borrowers from the federal agency Farmers Home Administration (FmHA) receive training in "financial and farm management concepts associated with commercial farming." Each state will have to develop a program for providing this training. In Nebraska, the Center is working with Extension and the Community Colleges to develop a "borrower training" program and curriculum. There is considerable potential to have this training include some of the topics covered in Land Link's "Starting Out Right" series. This training will be opened to the public and will provide an opportunity to reach thousands of farmers. If the Center is successful in getting the curriculum to include many of the topics mentioned above, Land Link's workshops will probably be discontinued.

Educational programs like these will become increasingly important because demographic patterns show a severe decline in the number of farm children, the traditional source of beginning farmers. Projections by the USDA's Economic Research Service indicate that, based on population surveys of male farm children in 1960 and 1970, the number of potential farm entrants who were 18 to 24 in 1987 had dropped by 30% in 14 midwestern states (Gale, 1993). Declining fertility rates among farm women combined with loss of population among rural farm women severely reduced the number of traditional beginning farmers—white males. If efforts are not made to teach non-traditional beginning farmers (non-farm males, females, and minorities) how to become farmers, there cannot be a significant increase in the numbers of new farm entrants.

Land Link Realty

Farm Management Services: Land Link Realty provides a farm management service that is unique to the industry. It furnishes all of the traditional management services but also provides specialized services for landowners who want to lease their land to beginning farmers who will practice sustainable farming methods.

The management services provided include: a Sustainable Agriculture Practices Report; lease analysis, negotiation, and preparation; livestock lease and management; collection of rent and income; and routine reports and visits.

The Sustainable Agriculture Practices Report is designed to describe what sustainable agriculture practices are currently being used on the farm and what future practices could be used to advantage. These could include soil and water conservation plans and recommendations on pest, tillage, soil nutrient, and facilities management.

All leases will be analyzed for their "sustainability." This includes whether the lease is providing both parties an economic return that will allow them to continue with the arrangement indefinitely. The leasing of livestock and equipment may be included and even encouraged.

Too often farmers sell off their short-term assets, leaving only the land for lease. F some beginning farmers, the ability to lease equipment and livestock is key to their lo capital strategy for getting started. Land Link encourages retiring farmers to think abou rental arrangement before they have liquidated the farm's non-land assets. The inclusi of livestock and equipment in a lease makes the management responsibilities more dif cult, and is rarely acceptable in the farm management industry. Land Link Realty, thoug believes these are important elements of a diversified, low-capital approach to getti started, so they are encouraged despite the complexity they raise for the farm manager.

Collection of cash rents, supervision of crop and livestock shares and the marketing products is done as specified in the services agreement between Land Link Realty and tl landowner . The number and type of reports to be provided the landowner are specified the service agreement as well. Normal reports include a monthly accounting report and periodic site report. Monthly accounting reports inform the landowner of the status of h or her account, including any amounts on deposit for the payment of future expenses, ar income, any expenses paid, any interest earned to the account, and the account balanc The agreement with the landowner specifies when funds from the account are to be di bursed to the client. Normally, if the client is using an interest-bearing account, th account is disbursed once each year. Periodic site reports are made as specified in th agreement.

Different operations require different reporting periods. An operation involving live stock may need monthly reports throughout the year, while a crop-only operation ma need monthly reports only during the crop seasons, and a quarterly or bi-monthly repor during the rest of the year. Regular review and reporting may be needed when a buildin site is involved to monitor upkeep and repair.

The Sustainable Farm Management Services Agreement also allows for individual tai loring of the services provided. Consultation activities such as accounting services, pay ment of bills and expenses, commodity market advice, annual cash management budget ing, and payment of real estate taxes can be contracted from Land Link by a landowner.

SUSTAINABLE FARM LEASE: Many farmers facing retirement and many non-operatin landowners rent out their farmland, either in preparation for selling the land or for long term investment income. Traditionally, many of these leases have been year to year an verbal, whether the tenant paid in cash or a share of the crop. These rental arrangement are convenient, but they have several limitations for both landowners and farmers inter ested in sustainable agriculture practices.

First, the shorter the term of the lease, the less incentive a tenant has to initiate long term practices, such as crop rotations using forage crops or legumes, or conservation struc tures such as shelterbelts and terraces.

Second, making a verbal lease rarely involves the kind of thoughtful discussion abou farming practices that needs to be considered when farmers or landowners are intereste in environmentally sound practices.

Land Link Realty has developed a "Sustainable Farm Lease" (see Appendix) that allows landowners and tenants to select a variety of sustainable farming practices best fitted to the needs of the farm. The lease is also used in Land Link Realty's farm management service.

For example, a landlord can choose to require the tenant to band rather than broadcast chemical applications or to require soil tests prior to the application of nitrogen. Reduced tillage, contour planting, stripcropping, or the use of liquid manures may also be required. For their part, tenants can solicit landowners by offering to put in writing the kinds of good stewardship they will use on the farm. Some landlords will prefer these kinds of farmers.

Over 30 different options are provided in the lease with flexibility for adding other provisions. Special sections can be used to identify the percentage of inputs to be shared between the tenant and landlord, or to develop a crop rotation plan.

FEE SCHEDULE: Land Link Realty's fee schedule is also unique and is designed to encourage landowner participation. The base fee for farm management services is 8% of the landowner's gross income, below the industry standard of 10%. Moreover, Land Link Realty will reduce fees by up to 4% for owner concessions, including reducing rent to a beginning farmer tenant and encouraging significant sustainable practices on the farm. For example, a landowner willing to rent livestock to a beginning farmer or one willing to give a long-term lease would have his/her service fee reduced. Even though managing livestock increases Land Link Realty's responsibilities (and therefore its costs) it will reduce fees to encourage these type of landowner concessions. This is one of the compelling reasons why Land Link is related to the charitable purpose of the Center, and not an unrelated commercial business.

OPPORTUNITIES FOR MANAGEMENT: The challenge is to identify those landowners interested in a management service such as that offered by Land Link Realty. Expressing an interest to farm is relatively easy, as evidenced by the hundreds of beginning farmers who have contacted Land Link. Reaching the point as a landowner where you are willing to commit assets to help a new farm family get started takes time and planning. The conventional, and easiest, way to retire has been simply to sell the farm for the highest offer if no heir exists (or even if one does but he/she isn't interested in fanning). Even those farmers who would have liked to have seen their farm leased or sold to a beginning farmer haven't been provided many alternatives. Many farmers do not even plan for retirement until the day it occurs. The 1991 Iowa Farm and Rural Life poll showed that 18% of the farmers surveyed (2095 responses from a sample of 3461 farmers) said they had no idea what would happen to their farm when they retire (Iowa State University, 1991). Land Link can help landowners consider and choose among the alternatives that do exist, without sacrificing income. Land Link does not advocate early retirement for farmers—it does advocate early planning.

Institutional landowners are also a source of opportunities for farm management. One of the first activities undertaken by Land Link was a survey to measure the amount of land held by Nebraska churches. Seventy-one churches responded (out of several hundred), with only six reporting any ownership of farmland. The six parcels ranged in size from 320 acres to 2.5 acres. Of these six, three had younger farm families operating the farm. The smaller parcels were either farmed cooperatively by the congregation or rented to nearby farmers. The most common response from the churches was that they usually tried to sell immediately any farm property received since cash assets are easier to manage than real property.

While the survey was not helpful in identifying possible management property, it was revealing to see the potential that exists among churches and other institutions that receive land to provide both income for the church and opportunities for a beginning farmer. The land could be used for an important social purpose that is now being lost when the land is simply sold to the highest bidder.

Reaching landowners, both individual and institutional, is the biggest challenge for Land Link, and will have to be an important component of any program to help beginning farmers.

BROKERAGE SERVICES: Land Link Realty also provides brokerage services to both sellers and buyers. To enhance opportunities for beginning farmers, it encourages landowners interested in selling to allow a beginning farm family extra time to arrange the purchase of the property. Beginning farmers often need more time to complete a purchase, and may need a more complex lending arrangement. They may also need help arranging a down payment or preparing a farm plan or loan presentation. All these activities take time and involve getting approvals and commitments from third parties. Therefore, Land Link Realty requests at least a two-year listing from landowners so that beginning farm buyers have the time needed to make a purchase. Brokerage services are also offered beginning farmers looking for land to buy.

Fees for brokerage services are also reduced for landowners willing to make concessions for beginning farmers—for instance, requiring a smaller down payment or selling the land on contract.

Stewardship Partnership Finance Fund

Land Link has consistently seen lack of credit as one of the barriers facing beginning farmers. It therefore includes as one of its components a Stewardship Partnership Finance Fund to link socially motivated investors with beginning farmers who want to practice sustainable agriculture. This Fund is only in the planning stages, but Land Link has developed several options to attract potential investors and provide needed financing for beginning farmers.

DOWN PAYMENT LOANS NEEDED: The Stewardship Partnership Finance Fund addresses the critical obstacle faced by most beginning farmers—the down payment to purchase farmland. Commercial lenders typically require up to 50% down before considering a loan for a real estate purchase. While Land Link believes beginning farmers should have some cash or equity for a down payment, that's just too high for any except those with sizable family wealth.

Land Link has therefore developed several options allowing an investor to assist with that down payment. Each of the options can be adapted to individual situations, depending on the needs of both the beginning farmer and the investor. By developing a creative package of financing between a socially motivated investor, a commercial lender, and the beginning farmer, both the benefits and risks can be shared. The options provide different levels of involvement for the investor, several methods of dealing with risk, and variable levels of return on investment.

THE WHOLE-FARM PURCHASE OPTION: An investor purchases a farm, paying 40% down to the landowner and financing the remaining 60% at a commercial bank for 10 years. The investor then sells the land on contract to a beginning farmer at a slightly below-market interest rate, receiving a 10% down payment which is applied to the bank loan.

The contract is for 10 years with a balloon payment, but it is amortized over 20 years to keep annual payments lower. Either the bank that makes the original loan or Land Link could collect and distribute the payments for a small fee. The investor may be eligible for a tax-exempt bond from the Nebraska Investment Finance Authority (NIFA) in return for selling to a beginning farmer. That will effectively increase his or her rate of return on the land contract, or, in the alternative, allow a lower interest rate to the farmer without reducing the investor's rate of return.

For example, we have a 160-acre farm valued at $104,000. The investor pays $41,600 in cash down (40% to the landowner) and finances the remaining balance at a commercial bank. The beginning farmer immediately pays 10% down ($10,400) on a Land contract, the principal of which is $93,600. The amount financed by the investor is therefore actually $52,000 ($104,000 minus $41,600 plus $10,400 equals $52,000).

While the investor's bank loan is for 10 years at 9.5%, making an annual payment of $8282, the full annual payment received from the beginning farmer ($9,533/year on a contract for $93,600 amortized over 20 years at 8%) is applied to the loan. That means the bank loan is actually paid off by the 9th year.

If you assume a nominal 2% annual increase in the land's value, it would be worth $126,773 after 10 years. That would give the beginning farmer an equity level of $58,710 ($126,773 minus $68,063 in refinanced debt), or 46%. With that much equity, he or she should have a relatively good chance of refinancing the contract.

THE DOWN PAYMENT LOAN OPTION: An investor could make a loan directly to a beginning farmer for 30% of the purchase price of the land. The beginning farmer would use the loan and his/her own funds to make a down payment totalling 40% of the purchase price, securing a commercial loan for the rest of the deal. The commercial loan would get a first mortgage, the investor's down payment loan a second mortgage.

Using the same example of a 160-acre farm valued at $104,000, the beginning farmer would combine $10,400 of his/her own cash with an investor's loan of $31,200 to make a 40% down payment. The loan would be at 8% interest amortized over 20 years, but would have a balloon payment at the end of 11 years.

The rest of the purchase price ($62,400) would be financed on contract from the landowner or through a commercial loan. In either case, we assume a 9.5% interest rate with a 20-year term. If either the bank or the landowner acquired a tax exempt bond from NIFA, the interest rate charged the beginning farmer could be lowered at least a percentage point and perhaps two points.

At the end of the 11th year the beginning farmer would pay the $1,706 interest on the investor loan and refinance the balance of $21,320 with a conventional loan. If the new loan were amortized over 20 years at 9.5%, the annual payment would be $2,419 and the total payment on the farm would be reduced. Even if land values did not rise, the beginning farmer's equity position at the end of the 11th year would be 40%. If land values rose 2% annually, the equity position would jump to 51%.

THE INTERMEDIARY OPTION: An investor could make a low interest loan to the Center for Rural Affairs which would act as an intermediary between the investor and the beginning farmer. The Center would use the loan to make the down payment on a farm, purchase the property with commercial financing, and then sell it on contract, through Land Link Realty, to a beginning farmer.

The loan would be a "limited recourse" loan, meaning that if the beginning farm defaults, the Center would only have to pay back the investor as much as it could reco er by selling the property or reaching some other settlement. The investor could also def the principal and interest payment for at least one year to allow the Center to find a ne beginning farmer and start the process over again. Or, the investor could convert all some of the unpaid portion of the loan as a donation to the Center. This approach m appeal to some institutional philanthropies.

Using our same 160-acre farm as an example, the investor would loan the Cent $41,600, which would be paid to a landowner as a down payment. The Center would the secure a 10-year loan from a bank, amortized over 20 years, at 9.5% to buy the farn reselling it immediately to a beginning farmer on a land contract.

The Center's annual payment to the commercial lender is $5,901, but the farm would be paying the Center $9,533 per year on the land contract. The Center would pa the difference to the investor. That payment of $3,632 per year would provide the invest a 6% rate of interest if the loan were amortized for 20 years.

But in the 10th year, the beginning farmer refinances the balloon payment on the lan contract, and with the same modest 2% increase in land value, should be able to refinanc with little difficulty. The Center would receive the balloon payment of $73,508 and woul pay off both the *commercial* loan and the investor loan.

LINKED DEPOSIT OPTION: A "linked deposit" could be made by an investor who purchases a 3-year bank certificate of deposit (CD) at the highest rate of interest allowed. The C would be renewable for two terms, giving it a 9-year duration.

A commercial bank would make two loans to a beginning farmer—the first to financ 60% of the land's value, the second to finance a 30% down payment. The beginnin farmer would have to make a 10% down payment from his or her own funds. The dow payment loan would be secured by a second mortgage and by the certificate of deposit.

SHARED APPRECIATION: The examples above provide a return to the investor rangin from 4.5 to 8.5%. In addition, investors may want to consider a shared appreciation agreement that could be available in each of the options.

In the examples, it was noted that with only 2% inflation, the farm rose in value to $126,773 in 10 years. This represents a $22,773 gain to the beginning farmer, due in part to the investor's capital. Some of the appreciated value could be shared with the investor, in proportion to his or her level of investment. If the investor makes a 30% down payment loan, 30% of the appreciated value could be paid to the investor. This would add $6,832 to the investor's total return, representing an added 2% annual interest earned over the life of the investment. This could be financed as part of the total refinancing package. Of course, this reduces the beginning farmer's equity, and may make refinancing more difficult.

All of these options are provided as examples only. Each case can be developed to suit the needs of the investor and the beginning farmer. In addition, Land Link is exploring mechanisms for financing beginning farmers through the issuance of investment bonds so that the investor's risk is spread among a pool of beginning farmers.

Obviously, these investments would only be made by socially motivated investors who understand and support the value of beginning farmers and sustainable agriculture. Neither the rates of return nor the level of risk would attract investors who don't care about these values. Still, Land Link believes there are such investors out there, and is starting a search for them.

Stewardship Legacy Fund

The Stewardship Legacy Fund is a permanent capital fund of the Center for Rural Affairs. It will be used by the Center to help beginning farmers who will practice sustainable agriculture and good land stewardship. Depending on the nature of the gift, either the Center or the Lincoln Foundation, a community foundation that professionally manages assets for charitable purposes, will hold and invest the assets. Income from these investments will be used to support the Center's work with beginning farmers and sustainable agriculture.

What kinds of gifts can be helpful? A gift of land is the quickest and simplest. The Center will sell the land on contract to a beginning farmer under favorable financial terms and with a requirement that good stewardship practices be followed. Or it can lease land through Land Link Realty's farm management service until that beginning farmer has enough equity to finance purchase of the land through commercial credit, government assisted credit, or seller financing.

Other gifts can help also. An "enabler" gift is any asset that can be used to help a beginning farmer make a down payment, get lower interest or otherwise enhance the beginning farmer's credit position. Money, marketable securities, life insurance, and other assets of this type could be used for these purposes.

A charitable remainder trust could also be of use to those who need to make estate planning decisions and have a tax problem because of the appreciated value of capital assets. In this situation a landowner would give the land to the trust irrevocably, designating the Center as trustee to manage the trust. The Center manages the property or invests the assets for income providing a life income for the donor or other designated beneficiaries. The donor gets an immediate income tax deduction for a portion of the value of the gift, and there will be no capital gain tax on the sale of appreciated property. As a result of these tax savings, the donor actually gets a greater effective rate of return on the value of the farm asset than he/she would have if he/she had maintained ownership of it.

If the gift is land, the Center as trustee will sell the farm to a beginning farmer on contract, or if other financing can be arranged, will sell it outright and invest the proceeds in securities. Or, the trustee may also retain all or part of the farm and lease it through Land Link Realty to a beginning farmer. When the last beneficiary payments are made, the land (or other asses in the trust) are added to the Stewardship Legacy Fund.

Conclusions and Recommendations

It is much too soon to draw many conclusions from the operation of Land Link. The program is too young to evaluate what its real impact will be on the problem of beginning farmers. A minimum of three years operation is needed before the Center is prepared to assess its potential, let alone its success. The program has drawn considerable nationwide attention to the needs of beginning farmers and has had very positive impacts on the lives of a dozen people but any assessment or evaluation beyond that is premature. There are, however, some general conclusions and recommendations which can be drawn from Land Link's experience.

Policy Implications of Land Link Program

As noted above, Land Link is a reaction to the lack of effective public policy for helping sustainable, beginning farmers, not a substitute for it. Both federal and state programs could be developed which build on the efforts made by Land Link.

Here are a few of the policy changes which could be instrumental in providing new opportunities for beginning farmers:

- The FmHA, the federal agency endowed with a public purpose to help beginning farmers, could aggressively adopt programs to help beginning farmers. FmHA's recent record is that while the agency publicly supports legislative and other initiatives to assist beginning farmers, it does little itself to enhance these opportunities. The 1990 Farm Bill contained a resolution directing the agency to create innovative programs to facilitate the transfer of farm assets from one generation to the next. Almost two years later, FmHA has done nothing to implement this congressional charge. The Farm Bill also mandated that beginning farmers be given a preference in the purchase of farmland held by FmHA. Currently almost 2700 farms with 890,000 acres are potentially available for sale to a beginning farmer under this provision but again, FmHA has delayed implementing the program and has made public statements that raise doubts about its commitment to helping beginning farmers have a meaningful chance to purchase the land.

- The permanent extension of the "aggie-bond" tax exemption would eliminate the uncertainty that has caused the lapse of some state beginning-farmer programs.

- State entities could establish clearinghouse projects similar to Land Link's to match beginning and retiring farmers. Several states have done so.

Recommendations to Other Groups Interested in a Beginning Farmer Program

- Some non-profit organizations are developing finance programs for beginning farmers using individual and institutional investors and secondary markets on which to sell the loans. These should continue to be developed and policies that permit these non-profits to make loans guaranteed by the federal government through the Farmers Home Administration should be explored.

- Programs creating equipment exchanges between beginning and established farmers should be developed so that beginning farmers have access to necessary equipment without expending a great deal of capital.

- Training programs for beginning farmers and those who would like to farm but have no experience should be developed. Training in fundamental farming and management skills may be the most important area needing to be addressed.

- Programs matching beginning farmers with landowners interested in long-term leases should be developed. This will allow beginning farmers stability and an opportunity to build equity for an eventual purchase of his or her own farm.

- A number of non-profit organizations and state entities around the country have expressed interest in establishing a beginning farmer program. Some are patterned after Land Link, others are not, but cooperation and a sharing of information among them would be useful to all. The process for developing a national network of such programs began in June of 1992 when 20 people from 14 organizations in 11 states convened at the Center for Rural Affairs in Walthill, Nebraska to discuss networking possibilities. A second meeting will be held in Iowa later this year. Preliminary plans are being made to at least share the names of both beginning and retiring farmers to more effectively reach people across the country and to prepare a directory of beginning-farmer programs. Organizations interested in this network should contact the Center for Rural Affairs.

Recommendations to the Agricultural Technology and Family Farm Institute.

- Explore the potential for developing educational and exchange programs for people who desire to begin a farming operation but do not have the experience necessary. One of the myths abounding today is that unless a person has grown up on a farm he or she is incapable of becoming a farmer. No other occupation (except royalty) is presumed to be limited to only those born to it. Unfortunately, our land-grant universities and technical colleges have failed to provide educational and training opportunities that would teach young people how to be farmers.

- Develop and assess whole-farm entry planning systems as a technology for reducing barriers to enter into agriculture. Land Link's Starting Out Right workshops is a curriculum for such a planning system, but much more needs to be done to achieve the complex decision-making system necessary to help prospective beginning farmers establish practical goals, analyze their strengths and weaknesses (and develop remedies for the latter), inventory their assets, evaluate the constraints they face, and define strategies. Farming Systems Research, Holistic Resource Management (Allen Savory), and Farmer-First, Farmer-Last (Robert Chambers) offer models for such a complex decision-making system, but none of these decision-making technologies is aimed at the specific needs of beginning farmers.

- Document and assess the financial limitations and needs of beginning farmers and develop creative concepts for how state and federal governments or non-profit organizations could respond to them.

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Appendix: Sustainable Farm Lease

This lease is made on __________ 200_, between ______________(Landlord), whose address is ______________________________ and ______________(Tenant), whose address is ______________________________

1. BASIC AGREEMENT AND DESCRIPTION. Landlord leases to Tenant the following described property in consideration for the rents and promises of TENANT in this lease:

2. TERM. The term of this lease is __________ years commencing on __________ 200_ and ending on __________ 200_

3. RENTAL. Tenant promises to cultivate all the tillable land on the premises in a sustainable manner, to properly care for the crops and when harvested deliver the Landlord's share at a time and place designated by the Landlord. The premises will be used in approximately the following manner:

A. ROW CROPS LANDLORD'S SHARE
1 _______________ _______ acres _______________
2. _______________ _______ acres _______________
3. _______________ _______ acres _______________
4. _______________ _______ acres _______________

B. SMALL GRAIN: _______ acres _______________
C. LEGUMES: _______ acres _______________

D. OTHER CROPS
1. _______________ ________ acres _______________
2..______________ ________ acres _______________

E. PERMANENT PASTURE: ________ acres
F. ROTATED PASTURE: ________ acres

Crop inputs shall be furnished, as required, by the parties in the following percentages:

	TENANT Percentage	LANDLORD Percentage
a. Seed	______	______
b. Fertilizer	______	______
c. Lime	______	______
d. Herbicide	______	______
e. Insecticide	______	______
f. Harvesting	______	______
g. Other	______	______

4. MAINTENANCE AND WASTE. During occupancy of the premises TENANT will allow no waste of fencing or timber, nor damage to any building. TENANT will keep the premises in good repair, and deliver the property at the expiration of the lease in like condition as it was taken, natural wear and tear or damage by the elements excepted.

5. DEFAULT. LANDLORD agrees that the TENANT may peaceably hold and enjoy the premises for the rental term, provided that in case any rent shall be due and unpaid, or if default shall be made in any of the promises made by the TENANT in this lease, LANDLORD may re-enter and repossess the premises after 10 days notice to the TENANT to cure the default, and may terminate the Tenant's rights under this lease, and recover from TENANT all damages LANDLORD may incur by reason of the breach of this lease.

6. SUB-LEASING. TENANT will not sublease, re-lease, or assign this lease without the written consent of the LANDLORD, which consent will not be unreasonably withheld.

7. HAZARDOUS MATERIALS. With the exception of fertilizers, pesticides, and other materials necessary or useful in Tenant's farming operations and as agreed upon under this Lease, Tenant shall not cause or permit any hazardous substances, hazardous wastes, or toxic or hazardous materials, or chemicals of any kind (hereinafter called "hazardous materials"), to be brought upon, stored, or used in or about the premises. With the exception of the application of fertilizers and pesticides in compliance with all laws regulating their use and application, applicable label instructions, and terms of this agreement, Tenant shall not apply, spread, release, spill, or dispose of any hazardous material whatsoever on the premises. Tenant shall indemnify, hold harmless, and defend Landlord against claims and actions seeking judgments, damages, fines, remedial or cleanup costs, and all costs and expenses of any kind, resulting from violation of any Environmental Law, or the application, release, discharge, spill, or disposal of any hazardous material at, on, under, or within the premises, during Tenant's occupancy, whether resulting from the Tenant's activities or the activities of others.

8. AGRICULTURAL PRACTICES. The following agricultural practices WHICH ARE CHECKED will be adhered to when operating the premises (check each that applies):

A. *Weed and Pest Control*

a. The Tenant agrees to scout for insect populations and apply chemical controls only after such scouting indicates that pests are at the level sufficient to cause economic loss.

b. The Tenant agrees to control noxious weeds using non-chemical means if possible, in a timely fashion prior to action by government officials.

c. The Tenant agrees to use mechanical and other non-chemical means of control as the primary methods of controlling weeds on crop ground.

d. When possible, the Tenant will delay mowing of road ditches, field edges, grass waterways, set aside acres and other areas of vegetation until after the nesting period for game and songbirds.

e. When methods of chemical control of weeds are employed the Tenant agrees to use application implements to band the chemicals and agrees to apply them at rates not exceeding the minimum recommended by the manufacturer.

f. The Tenant agrees not to use aerial spraying without the written permission of the Landlord.

g. Other _______________

B. Tillage Practices

a. The Tenant agrees not to use a moldboard plow.

b. The Tenant agrees not to use a moldboard plow for fall tillage on ground to be planted the following spring.

c. The Tenant agrees to maintain crop residue at a level necessary to comply with state and federal soil conservation laws.

d. The Tenant agrees not to till any permanent pasture, meadow, native prairie, or forage crops without the permission of the Landlord.

e. The Tenant agrees to use reduced tillage methods for the production of row crops where feasible.

f. The Tenant agrees to farm pursuant to a conservation plan developed in cooperation with the Landlord and state and federal soil conservation officials.

g. Tenant agrees to develop a conservation plan with the Soil Conservation Service which brings the soil loss down to the "T" (tolerable) level set by the USDA.

h. Other _______________

C. Management of Soil Nutrients

a. The Tenant agrees to spread all available animal manure on fields, but only when the ground is not frozen. Whenever possible, manures from livestock confinement operations and feedlots will be incorporated into the ground the same day as it is spread.

b. The Tenant will develop a system for growing green manure crops which can be planted in the fall and incorporated into the soil.

c. The Landlord shall in the division of costs and expenses under the lease, give the Tenant credit for the nutrient value of green manure crops as demonstrated by subsequent soil fertility tests or in direct proportion to the cost of producing the crop.

d. The Tenant will apply purchased fertilizers only after having taken soil samples and having received two analyses of the soil test.

e. The Tenant will not apply nitrogen fertilizers in the fall for crops to be planted the following spring. Prior to the application of nitrogen in the spring the Tenant will employ a nitrogen soil test.

f. The Tenant will not mechanically remove any organic material in the form of crop residues left after harvesting of grain crops without the Landlord's permission.

g. The Tenant agrees to adopt and implement a system of crop rotations as follows:

h. The Tenant agrees not to harvest any forage crops after September 1 without the Landlord's permission.

Other _______________

D. Soil Conservation Practices

a. The Tenant agrees to keep all grass waterways, terraces, ditches and tile outlets in good repair

b. The Tenant agrees to comply with any requirements of the Agricultural Stabilization and Conservation Service such as those concerning establishing conserving cover crops,

controlling weeds on set-aside acres, which are necessary to maintain eligibility to participate in federal production control and price support programs.
c. The Tenant agrees to maintain any vegetative or structural measures designed to control wind and water erosion, including the maintenance of strip crops, field windbreaks, contours, water control structures, and ponds.
d. The Tenant agrees to employ contour farming practices on any slopes that will experience soil erosion if farmed another way.
e. The Landlord agrees to pay the cost of any soil conservation structures required to comply with Soil Conservation Service approved conservation plans for which government cost sharing money is not available.
f. Other ________________
E. *General Stewardship*
a. The Tenant agrees not to graze any timber, woodlands or pastures not normally grazed without the permission of the Landlord.
b. The Tenant agrees not to cut any standing timber or to engage in any land improvement work, such as the removal of trees or hedges, stream channelization or draining of wetlands, without the permission of the landlord.
c. The Tenant agrees to employ alternative methods of roadside vegetation management other than chemical control.
d. Other ________________

IN WITNESS, Landlord and Tenant have set their hands on this _____ day of _____, 200_.

Landlord ________________
Tenant ________________

Saskatchewan Short Line Rails

Paul Beingessner

Facing imminent rail abandonment, 150 farmers along two branch lines in southern Saskatchewan banded together in 1989 to form Southern Rails Co-operative. It was the beginning of the short line rail industry in the province.

Saskatchewan's first common carrier short line railroad under the newly passed Saskatchewan Railway Act was formed as a traditional co-operative—probably the first co-op railroad in Canada. Saskatchewan's long history of solving economic problems through co-operatives made it a natural option for farmers. But it was natural too that the farmers who formed Southern Rails had a vigorous debate over whether the company should begin life as a private business venture or as a co-operative. In the last two decades of the century, Saskatchewan farmers have seen their major institutions questioned and altered radically, and have been unable to achieve consensus on very much.

Perhaps, characteristic of the odd mix of politics in Saskatchewan, it was a provincial Progressive Conservative government that promoted the fledgling short line concept, and gave the co-operative notion its blessing. Under the Romanow New Democratic Party government that succeeded Grant Devine's Progressive Conservatives, the relationship between Southern Rails and the province became much more distant.

The beginning of Southern Rails was a mixture of pragmatism and politics, as had been most decisions in the grain industry from the advent of European settlement. Highways and transportation minister in the Devine government, Sherwin Peterson made rail abandonment his personal issue, attending abandonment hearings in the early eighties as a rookie MLA. While minister, he fostered the development of the Road/Rail Vehicle, a highway tractor converted to operate on rail and road with equal ease. The vehicle made it possible to create a viable short line company by operating several unconnected branch lines with one power unit. Many in the Department of Highways believed this innovation could help thwart the railways' strategy of lopping off the ends of branch lines, bit by bit. Otherwise the railways could eliminate a line without abandoning a large enough piece at one time to allow the creation of a viable short line.

Area farmers, on the other hand, were simply interested in maintaining their local service. They had practical reasons. For example, shorter hauling distances saved them time and money. They had less self-interested reasons too, including a desire to preserve the remnants of the communities that had birthed, schooled, fed and employed them.

The farmers who formed Southern Rails Co-operative, whether idealistic or pragmatic, had little idea when they began how the political process worked. They were soon to find that the federal railways had a very good idea how the system functioned. The railways were formidable foes, used to getting what they wanted, even if it meant waiting for decades. What follows is the story of that political process told from the perspective of those who formed the co-operative.

Background

The advent of Southern Rails was framed by a number of pieces of legislation. These created the environment that gave birth to short line railroads in western Canada. Government programs, like the Prairie Branch Line Rehabilitation Program, were also crucial to the genesis of Southern Rails.

Western Grain Transportation Act

The most significant change occurred in 1984 when the Liberal government in Ottawa, with Jean Luc Pepin as transport minister, ended the historic Crowsnest Pass Agreement, and put in place a new formula for determining freight rates for moving grain. Under the new Western Grain Transportation Act (WGTA), rates would continue to be distance related, but would gradually increase. The Act also protected most prairie branch lines from abandonment until the year 2000.

Freight rates were to become cost based. The railways would be paid all costs associated with grain-dependent branch lines, and all volume-related costs on main lines. As well, there was to be an amount equal to 20% of the volume-related costs to go toward the railways' fixed costs. The federal government committed itself to a subsidy in perpetuity of $650 million with farmers to pay the remainder (although the Liberals were later to permanently alter the dictionary meaning of "perpetuity" in western Canada). Inflationary cost increases were to be absorbed partly by farmers and partly by the federal government. The formula was set in such a way that the farmers' proportion of the total rate would increase as increasing volumes and inflation raised the total costs. Before 1984, the rate for the average grain haul from western Canada to export position was $ 5.97 per tonne. By 1987, it had risen to $32.97, with farmers paying $9 of that.

The increasing freight rates meant some members of the farm community joined the railways in decrying the expense of high-cost branch lines. These new voices began to fragment the rural population even more, as farmers adjacent to the main lines saw that distance-related rates meant they were subsidising farmers in the "hinterlands." The notion of farmers competing with each other for survival began to replace the ideal of co-operation. Principles of equity, supported in western agriculture by practices such as Wheat Board price pooling and distance-related rates, began to be questioned as the "me generation" mentality invaded even the farm communities.

The WGTA offered an alternative for those branch lines whose fates were in question. The creators of the Act had seen the success of the American short line industry after the Staggers Rail Act deregulated American railways in 1980. They felt short lines could provide lower cost service on branch lines than could the major railways. The authors thus inserted a clause in the WGTA, Section 60, which allowed for payments from the Crow Benefit (the federal grain transportation subsidy) to be made to "companies other than railway companies". In Canada, this specifically meant short line railroads, since to be a "railway" under the definition in the federal transportation act means to be incorporated under a federal charter. Most short lines operate under provincial jurisdiction and thus, they are not technically "railways."

National Transportation Act, 1987

The National Transportation Act of 1987 (NTA'87), Canada's response to the American Staggers Rail Act, furthered the process of deregulation that had a tentative beginning for the rail industry under the NTA of 1967. However, the government in Ottawa had seen how the American version of deregulation had left captive shippers at the mercy of the railroads. As Montana farmers captive to Burlington Northern had found out, "mercy" was not the railways' strong point. To strengthen the hand of shippers, the Act contained provisions, such as competitive line rates and interswitching, that created a measure of competition even for shippers captive to one railroad.

The NTA'87 also brought into existence confidential contracts for goods moved by rail—contracts made between individual shippers and the railway. Prior to this, all rail transportation was carried out under published tariffs. Grain was left as the only regulated commodity. Rates for grain were to remain cost based and distance related, and grain shippers did not have access to the new provisions for captive shippers.

The government predicted the development of a short line rail industry in Canada under the new NTA. Short lines had taken off in the U.S. under deregulation. Designers of the NTA'87 wanted to give the railways freedom to act as they saw fit from a commercial standpoint, but also wanted to prevent a politically dangerous wave of rail line abandonments. Thus the Act contained a strong public interest clause. Railways were to be allowed to abandon even lines that were profitable, unless public interest dictated the necessity of their retention. In fact, protecting the public interest became the sole criterion that could prevent the railways from abandoning lines. Even when the railways were allowed to cease operations on a line, the fate of that line was not entirely in the railways' hands. Section 173 of the Act dictated that, if there was a buyer for the line, the railway was forced to sell the line, rather than abandon and tear it out. The price for such "forced" sales was set at net salvage value.

There were provisions in the Act, too, for sales of rail lines to short line operators on a willing buyer/willing seller basis. This was detailed in Section 158.

The government of the day designed the new conveyance and abandonment measures so that Canadian railways could prune their overgrown systems. To mitigate the fallout from the expected flood of applications, the Act allowed the railways to abandon only 4% of their route miles in any one year, for the first five years after passage of the Act.

The flood never materialised. The railways would later explain their slow efforts at system rationalisation by pointing to the 4% per year ceiling. In fact, in some of those first five years, the railways applied to abandon less than 1% of their track miles per year. A less talked about reason was that the success of the initial short lines in western Canada meant the railways were not keen to abandon lines only to contend with a successful short line.

Prairie Branch Line Rehabilitation Program

Rail Rehabilitation was also to play a major role in the fate of the branch lines ultimately to become Southern Rails Co-operative.

For much of this century, the revenue coming to the railways for the movement of grain was governed by the statutory Crowsnest Pass Agreement. By the 1970s, the railways were bitterly proclaiming that this revenue was insufficient to allow reinvestment in rolling stock or in the prairie branch line network. Most grain dependent branch lines were in a dismal state of repair. The federal government's response was to implement a program of rehabilitation, which was to be carried out by the railways at taxpayers' expense.

Over the 10 years from 1979 to 1988, the government poured nearly $1 billion into the Prairie Branch Line Rehabilitation Program. To qualify for rehabilitation money, a line had to be designated grain dependent. This was defined as a line where 60% or more of the traffic on the line was grain. Lines were selected for funding on the basis of recommendations by the Prairie Rail Action Committee (PRAC). Lines that were upgraded were generally able to increase the weight of the cars they could handle from the 177,000 pounds loaded weight of a boxcar to the 263,000 pounds loaded weight of the new hopper cars being purchased by the government.

Being refused upgrading would ultimately seal the fate of many prairie branch lines. The inefficiencies involved in not being able to fully load hopper cars would be a telling factor in decisions to abandon.

The Branch Line Rehabilitation Program was a veritable gold mine for the railroads. Road bank widening, tie replacement, ballasting and bridge upgrading were undertaken. Many of the branch lines operated by Canadian National Railway (CNR) had been laid with 60 lb. steel rails. This was considered too light for the new 263,000 lb. gross car weights, so they were usually replaced with 100 lb. rails. As much as $300,000 per mile was lavished on some of these lines. Most Canadian Pacific Railway (CPR) branch lines were originally built with 80 or 85 lb. rails. This was considered sufficiently heavy to carry fully loaded cars, so average amounts spent on these lines was usually less—around $50,000 per mile.

The $1 billion was a free gift to the railways, but government apologists would justify it on the grounds that the railways had been denied sufficient income from grain handling for many years. The railways were not allowed to depreciate the value of the federal contribution, but any residual value left in the track from the rehabilitation could be recouped by the railways when they abandoned these lines. In cases where rails were relaid, this value can be substantial.

The disparities between branch lines caused by the federal Branch Line Rehabilitation program created the conditions for the emergence of short lines on the prairies. The selectivity of the Rehabilitation program meant the railways had a further incentive to cease operations on lines that could not carry fully loaded cars. The NTA'87 meant the railways had to sell rather than abandon if there was a willing operator. And the WGTA provided a source of funding under Section 60.

Alberta Strikes First

First to respond was Tom Payne, a former CP engineer, who founded the Central Western Railway Corporation in 1986, and negotiated the purchase of the Stettler subdivision in Alberta from CN. The 104-mile Stettler subdivision was 60 lb. rail and had been bypassed by the federal Rehabilitation Program. This made it an ideal candidate for rationalisation, and subsequent short lining, but Payne soon discovered he would have to leap a multitude of hurdles before he could realise his goal.

One of these problems centred around the failure of Section 60 to define a process for settling the amount of compensation to be paid to short lines. After considerable wrestling between Central Western and the government, the rate for operation of the Stettler was determined in part by a downward extension of the existing WGTA rate scale, and partly by a pragmatic approach that simply asked what revenue the new company would require to be viable. In its initial years, this meant the amount of money the new Central Western Railway received was almost equal to the revenue CN had been getting to operate the line.

An even greater issue for the fledgling short line was whether it would have to assume existing union contracts and hire existing union employees. One of the reasons short lines can operate at lower cost than the main line carriers is because of the level of wages paid to unionised rail workers and the work rules that govern what each employee can and can not do. Rail workers are among the highest paid industrial employees in North America. Rigid craft rules tend to result in inefficient operations on branch lines, where a more versatile employee can be more productive. Short lines generally pay lower wages than the major railways. Short line pay scales tend to be comparable with wages paid for similar jobs in the local economy.

Central Western Railway's efforts to exclude unions eventually ended in the Supreme Court of Canada. Union leaders viewed it as a move toward a system that would eventually see a network of short lines ravage their membership. The immediate issue of the Stettler subdivision was much simpler. There was no possibility that a branch line with 60 lb. rail that missed the federal rehabilitation program was going to be around for long. There was also no point in creating a short line that could not operate any more cheaply than its former owner. Section 60 was meant to do more than transfer ownership.

To the labour unions, the issue was one of precedent. In 1988 the Supreme Court ruled in Central Western's favour. Alberta's short line railway was allowed to function with non-union labour.

Saskatchewan Follows Suit

The Saskatchewan government, meanwhile, had watched Alberta's experience with its short line. It had also watched the railways' strategies for line abandonment, and the government was worried. Saskatchewan has the lion's share of cultivated acres and rail branch line miles on the prairies. It also has a fragile road network—thousands of kilometres of thin membrane asphalt roads. These are nothing more than rural grid roads with an inch or two of asphalt poured on them to create a dust free, all-weather surface, and to hold the stones down.

The province's Highways Department knew branch line abandonment would throw a tremendous burden on the provincial treasury for road upkeep. It saw how the railways were taking the system apart, piece by piece—first breaking connections of through lines by taking a piece out of the middle, and then whittling off pieces of these lines from the end until eventually, the line was gone. But the Highways Department also foresaw an increasing rate of line abandonment. The bureaucrats knew some of these lines could be candidates for short lines, but the railways could thwart this. The very pieces the railways were segmenting off might be needed to operate these lines economically as short lines.

Department officials believed they could put several of these lines together to make a viable company, but it would take some creative measures. They began working on a design for a prototype "locomotive" that could be used to serve more than one line—lines that were not connected to one another. The result was a hybrid vehicle that could operate on rail to pull a significant number of grain cars, and then move onto the road to travel to the next rail line to do the same thing.

With a working design, and faith in their concept, the provincial government began, in the mid-1980s, to look for some rail lines that were candidates for abandonment and could be a test case for their short line project. They did not have to look too far. The two branch lines which were to become the Southern Rails Co-operative differed little from other prairie branch lines. The Avonlea subdivision, running from Moose Jaw to Radville in Southern Saskatchewan, was built by the Canadian Northern Railway Company. Completed in 1912, it served the grain growing area east of the Missouri Couteau. In 1919, the line came under the control of CNR. For the next four decades it was the major transportation source that carried people and goods to and from the villages it served. After passenger service was discontinued in 1962, it remained as the means for farmers to get their grain to export markets. The 25-mile-long Colony subdivision was one of the last to be built by CPR on the prairies. Completed around 1931, it wound its way through rugged terrain, from Rockglen to Killdeer. As was the case with most prairie branch lines, stations were not much more than six or eight miles apart. The Colony subdivision supported settlements and grain elevator service at Quantock, Strathallen, Canopus, and Killdeer.

The Fight to Keep the Rail Lines

By the 1970s, the grain transportation system was in trouble. Claiming inadequate revenues as a result of the statutory Crowsnest Pass freight rates, the railways had ceased investing in rolling stock or rail infrastructure. The result was a deteriorated branch line system, and an ageing and outdated fleet of boxcars. The federal government appointed a Royal Commission under Justice Emmett Hall to examine the system. In April 1977, Hall's Grain Handling and Transportation Commission produced a report that was to determine the future of many prairie branch lines.

Hall realised the need for some rail abandonment on the prairies. His vision called for a regulated, rational branch line network, which functioned in the best interest of the farm population. Because of this, in several cases he recommended transferring ownership of a branch line from one federal railway company to the other. In these instances, some miles of redundant track could be eliminated without affecting service to farmers. This was a useful and effective concept in a co-operative, regulated system. However, it sometimes led to one railway having a monopoly in an area where competition had once existed. In the years following Hall's report, the Canadian government moved dramatically away from regulation of the railway industry, to embrace competition as the means for achieving efficiencies in transportation. Hall's ownership swaps made sense in a regulated system. In a competitive one, they had eliminated competition in some areas, leaving the railways no reason to continue to operate these lines any longer than necessary.

Specifically regarding the Colony and Avonlea subdivisions, Hall recommended that CPR be allowed to abandon the Colony subdivision, but said the abandonment should not take place before 1981, because of the possibility of the development of reserves of pottery clay and lignite coal that occur in the area. The southernmost portion of the Avonlea subdivision, from Parry to Radville, was to be abandoned also. The fate of the rest of the line was placed in the hands of the Prairie Rail Action Committee (PRAC).

The Avonlea Subdivision

With F.W. Anderson as chair, PRAC issued its report in November 1978. It recommended abandonment of the portion of the Avonlea subdivision from Avonlea to Parry by December 1982. Although CN was to be permitted to discontinue rail service to the line by this date, PRAC went on to recommend the portion of the line between Avonlea and Truax be left in place until December 1983. Saskatchewan Minerals had indicated it was interested in building a plant at Truax to process bentonite. Bentonite, a clay with several industrial uses, is found in large quantities four miles east of Truax, one of only a few locations in North America. PRAC felt the delay in removing the rail would allow Saskatchewan Minerals to make its decision as to the location of the plant. PRAC further recommended the remainder of the Avonlea subdivision, from Avonlea to Moose Jaw, be upgraded and added to the basic rail network.

On October 6, 1982, the Western Division of the Canadian Transport Commission (CTC) held a hearing in the Community Hall in Avonlea into the abandonment application for the section of line from Avonlea to Parry. For the farmers from the tiny communities of Truax, Dummer, and Parry, this threat to their line was only one in a long series. For almost 20 years they had fought CN's attempts to shut the line down. The first of these struggles had occurred in 1963 when the CNR applied to the Board of Transport Commissioners to abandon the line from Avonlea to Radville. This application was subsequently withdrawn but returned again in 1966, 1969, and 1971. A series of prohibition orders issued by the federal government thwarted CNR's efforts. Each of these occasions saw persistent lobbying efforts by area farmers.

When the CTC hearing was held in 1982, farmers recognised this as the most serious challenge they had faced. Though some were worn down by the constant threats to the line, there was no sign of surrender yet. As an older farmer told the elegantly dressed commissioners at the hearing: "I've spent half my life fighting to keep this line. I'm not about to quit now." Indeed, he and the others had good reasons. Grain production was going well. Two of the elevators on the line were less than 16 years old and the other was a relatively youthful 25 years old. In 1982, the farm economy was still buoyant. Falling grain prices and nearly a decade of drought were on their way, but no one could have suspected that. Further, there had already been considerable organising among farmers in the area to fight the abandonment threat. The rail retention committee had been revitalised. Several briefs were prepared by the committee and by other community groups and individuals to present to the Commission.

Still, the formal judicial setting of the CTC hearing, presided over by Commissioner Jim McDonough, was an unfamiliar and intimidating process to the 150 farmers who filled the hall. Unused to the structure of the proceedings, most farmers did not register as formal participants and were therefore prohibited from asking questions of the various intervenors. With the shyness characteristic of working farmers confronted with a barrage of lawyers, few would have dared speak up anyway.

The railway presented its case for abandonment, showing massive losses on the line, some $535,000 in 1980 alone. To the farmers in the hall, the numbers were scarcely believable. What could CNR possibly have done on 22 miles of track to spend that much money? Unfamiliar with the complexity of modern railway cost accounting, the farmers could hardly have been expected to understand that most of the costs were occurred "off-line," or that almost all branch lines in Saskatchewan were incurring similar losses at the time. Thus the hearing served to confirm the widely held suspicion in the area that CNR "cooked" its books and that there was little hope for a fair judgement.

The CTC ruling, issued some 12 months later, was true to expectation. The line was to be abandoned on August 31, 1985. Fortunately, the same stubbornness which prevented area farmers from believing CNR could spend half a million dollars on their line also kept them firm in their belief that moving grain by rail made more sense than closing 16-year-old elevators and hauling by truck. For the farmers at Truax, Dummer, and Parry, their railway made sense, and they were not going down without a fight. The abandonment of the rail had to be a mistake. Perhaps if they only got to the right person with that simple message, the sentence could be lifted.

The first avenue was to appeal the CTC decision—to the CTC, of course. Though the retention committee saw this as a fruitless task, it would buy some time. Any delay was positive. The group was astute enough to realise that, with a federal election looming, politicians might be more amenable than usual to a bit of arm twisting. The CTC Review Committee issued its verdict on June 13, 1984. The grounds for appeal had been rejected. The Review Committee would therefore not hear an appeal of the decision. Any further interventions would have to come from the federal government.

On November 21, 1984, with abandonment only nine months away, the local retention committee wrote to PC MP Len Gustafson to seek his intervention. On December 13, Gustafson wrote back to reassure the Committee there would be no further rail abandonments till the government completed the 1985–86 legislative review of the WGTA. He also hinted that "new options and technological advances" might allow the branch line to be retained at a lower cost. The abandonment order for the Avonlea subsection was subsequently stayed until January 1, 1987.

The Colony Subdivision

In 1982, the Colony line was in a similar position to that of the Avonlea subdivision. The Hall Commission in 1977 had recommended abandonment of the line but proposed it not happen until 1981. On November 23, 1982, some six weeks after the hearing on the Avonlea line, the CTC held its hearing into CP's application to abandon the Colony line.

Farmers on the Colony line, like those on the Avonlea, had a history of activism in protecting their rail line. In 1961, just 30 years after it had completed construction of the Colony, the CPR had first made application for its abandonment to the Board of Transport Commissioners. While this request was ultimately denied, the battle lines had been drawn.

Farmers on the Colony rail line felt they had a special case to make for retention. In return for building the line through unusually difficult terrain, the CPR had been given an exceptionally large land grant. The company recruited settlers in Britain to take up the land and sold it to these settlers. The ensuing community was known as "The Colony." Local people maintain that the CPR had promised to operate the railway "so long as they or any of their descendants resided on the land."

The area retention committee presented a detailed brief outlining the problems that abandonment would create for the area. While it was not possible to deny the poor condition of the elevator facilities on the line, the committee gave a full description of the rugged geography of the area, indicating the major difficulties farmers would face if they had to rely on trucks to move their grain to further elevator points. Much of the brief focused on the mineral resources found in great abundance in the area. The committee pointed out that over four billion tons of coal lay in reserves within a few miles on either side of the railway. They also indicated the presence of economic deposits of stoneware clays and a deposit of volcanic ash estimated to contain two million tons, adjacent to the line.

The committee made a final eloquent plea, not unlike those that graced many briefs in this era of rail abandonment. In desperate straits, rough hands turned to impassioned words:

> This Committee submits for consideration the proposition that rail line abandonment involves more than dollars and cents, steel and grain, elevators and boxcars. It involves, primarily and foremost, people, flesh and blood, neighbours and friends, tremendous emotional trauma, upheaval, and dislocation and disruption of family ties. It involves in some cases a complete change in a way of life and in some areas a complete re-allocation of land use… . How can anyone seriously and conscientiously maintain that the railways have no moral responsibility to a community which may never have existed but for the railway? Such an assertion is a monstrous affront to the intelligence and feelings of the people who settled that area only on the basis of the railway being there (Rockglen-Killdeer Retention Committee, 1982, p. 53).

The CTC did not wait long to issue a judgement. Its order came forth on November 29, 1982. The Commission ordered the CPR to continue operating the line. The decision, based largely on the convincing evidence of potential resource development, was, by law, to be reviewed in not more than five years.

When the review of the Colony subsection came five years later, resource development was still just a dream. The Wheat Pool's only remaining facility at Killdeer was in dismal shape and CPR continued to allow the line to deteriorate. The outcome was different this time. The line was given one more year, with an abandonment date set for December 31, 1988. This was subsequently stayed until August 31, 1989.

The Other Players Step In

In 1984, MP Len Gustafson had hinted at "options" for the short line railways that would allow them to be kept at reduced costs. Indeed, Gustafson's options quickly became the subject of an inquiry. Under Chief Commissioner Jim McDonough, the CTC was given the mandate to examine "the potential for short line operations in Canada."

The government of Saskatchewan presented a 335-page submission to the McDonough Inquiry. In it were three proposals for pilot projects which the Department of Highways felt would provide some possible solutions to the rail abandonment it feared would decimate prairie communities and ravage rural roads. These included a traditional short line demonstration project, a road/rail short line, and a project to evaluate the feasibility of retaining elevators on abandoned branch lines using the abandoned rail beds for trucking the grain from these elevators, rather than on municipal roads. The province suggested these projects be funded from the WGTA subsidy, the so called "Crow Rate benefit." If they proved viable, the province pointed out that local elevator service could be maintained while the cost of providing transportation services could be significantly reduced. This was true when compared to the cost of maintaining traditional rail service or to the cost farmers and the road system would incur if grain transportation were shifted from the railroad to the provincial and municipal road networks.

McDonough's report was issued June 28, 1985. On one hand it left room for the possibility of short lines: "we support the idea of limited experimentation prior to making irreversible decisions—particularly for innovative technologies such as this new road/rail power equipment" (McDonough, 1985, p. 53). On the other hand, it held out little hope for their success. The report concluded that both extended producer trucking and off-line elevators with commercial trucking to main line rail points were likely to be cheaper than the short line option. McDonough was able to come to this remarkable conclusion because of assumptions he made about potential road impacts. "We were not able to assess the incremental road maintenance costs with confidence; however there is evidence that this may not be as significant as some would allege it could be" (p. 63). Therefore, in comparing the cost of short line operations with trucking alternatives, the committee assumed the "cost of incremental highway/road maintenance to be insignificant, or considered a right of provincial trucking operations to use the roads and thereby to be absorbed by the respective provinces" (p. 63).

Despite its pessimistic tone towards the road/rail project, McDonough's report contained a number of innovative ideas that would have fostered the branch line network. One of these would have seen the subsidy, which was then paid to the major carriers to operate branch lines, made available to anyone who could provide the same function, i.e., moving grain off the branch line. McDonough proposed a number of scenarios to allow the transfer of ownership of the line to take place. McDonough's recommendations, however, were largely ignored by the federal government that had sought them.

The government of Saskatchewan continued to press for implementation of the road/rail project. In August 1986, the Senior Grain Transportation Committee (SGTC), an advisory body to Transport Canada, struck a sub-committee to evaluate the proposal. The sub-committee was composed of representatives from CNR, CPR, Saskatchewan Wheat Pool, Transport Canada, the Grain Transportation Agency, the Canadian Trucking Association, two producer representatives from the SGTC, and a number of producers from the three branch lines that were being considered for the project. A smaller working group was then established to carry out some detailed cost analysis.

The government of Saskatchewan had presented a detailed proposal which showed the road/rail option to be cheaper, when all costs were counted, than the options of continued service by the main line carriers, complete abandonment, or retaining the existing elevators as off-track facilities with trucking to adjacent points which still had rail service. In addition to the Colony and Avonlea subdivisions, the proposal included the portion of the Fife Lake subdivision from Coronach to Big Beaver.

The sub-committee's report was inconclusive. The sub-committee was reluctant to accept the Saskatchewan government's road impact analysis. It acknowledged that with those road costs included, the road/railer option was the most cost effective overall. But when road costs were ignored, abandonment was the cheaper option by a wide margin. The sub-committee felt it "lacked the expertise and the time ... to develop a set of road costs which it felt would be acceptable" (Saskatchewan Road/Railer Sub-Committee, 1986, p. 9). Transport Canada would spend the next decade arguing it could not develop a methodology for the cost of additional truck traffic to highways; therefore it could consistently justify ignoring road costs in discussions of rail abandonment.

The sub-committee did one other unusual thing. It altered the provincial government's estimates of the cost of the road/rail project, increasing them almost two-fold. The three areas where the sub-committee differed with the Saskatchewan Department of Highway's estimates were in liability insurance, wages, and track maintenance. The influence of the major railways could clearly be seen in this. While the province had estimated depreciation and maintenance costs on the three branch lines to be $130,000 per year, the sub-committee estimates put maintenance requirements at $250,000 per year. Where the Department of Highways felt a single individual could operate the road/rail vehicle, the sub-committee assumed a three-person crew would be necessary. At that time the federal railways were still using three- or four-person crews even on small trains on branch lines. The provincial government's estimates were based on the assumption that short lines in Canada would achieve labour efficiencies and savings in line with those of short lines in the United States. On the matter of insurance, the sub-committee thought liability insurance would consume $100,000 per year, while the province estimated $35,000. Ultimately, the provincial figures would prove to be far closer to those achieved by the short line road/rail operation than were the SGTC estimates.

The Saskatchewan Wheat Pool was deeply involved in this process. It was the only grain company operating elevators on the Colony and Avonlea subdivisions, and it sat on the SGTC sub-committee that examined the provincial government's road/rail project proposal. But in their battle to maintain rail service the farmers found their co-operative elevator company, the Pool, to be a most reluctant ally. The elevators on the Colony had been closed in 1982, with the exception of the one at Killdeer. The Killdeer elevator was still in operation in the mid-1980s, but by that time it was over 50 years old. In contrast, the elevators on the Avonlea subdivision, at Truax, Dummer, and Parry, were built in 1964, 1957, and 1966 respectively. Nevertheless, all of these were small storage elevators, each handling less than half a million bushels yearly. The Wheat Pool, like the other grain companies in western Canada, was building larger and larger elevators and closing small ones. Company officials were clear about two things: first, the amount of grain required to make an elevator viable was increasing, and second, elevators that were losing money would be shut down. This was, of course, far more likely to happen on lines where there was no competition from other grain companies.

The Saskatchewan Wheat Pool was not much interested in short line railroads. In particular, the company was openly sceptical about the usefulness of the road/railer technology and about the ability of a bunch of local farmers to successfully operate a railroad. Behind those concerns was a real fear within the Pool that if short lines became an option for branch lines, particularly those which were not upgraded, it would make it difficult to close elevators on those lines, especially if these elevators were still profitable. Concerns were also evident about direct producer car-loading. If elevators were to close but the rail remained, operating and locally controlled, it would be feasible for producers to bypass the elevator system entirely and load their own rail cars. By avoiding elevator-handling charges, producers could save $600 or more per car. In the late 1980s, with grain prices tending to record lows, this could be an attractive alternative. If farmers began to load producer cars, they might learn to like it.

The provincial government was concerned about the impact rail abandonment would have on the provincial road system and on rural communities. The government believed that if producer car-loading could capture the majority of grain in an area, elevator companies might be more reluctant to close facilities. The first short line in Saskatchewan was to be a test of these possibilities.

The provincial government was anxious to give its budding short line every chance it could. To do that, as much grain as possible had to be kept on the line, and despite their hopes for producer car-loading, government bureaucrats knew the lines would be best off if elevator service was preserved. On March 15, 1987, highways and transportation minister Grant Hodgins wrote to Saskatchewan Wheat Pool president Garf Stevenson requesting the Pool's co-operation with the road/rail project. Stevenson wrote back in April 1987, explaining his company's position. The Pool was intending to close elevators at Killdeer and Dummer in July 1987. Stations at Parry and Truax would remain open, subject to yearly review. He indicated the Pool was "well equipped to handle the grain at alternate stations." However, Stevenson did say that if the project was going to proceed, the Pool would continue to operate the elevators, provided someone else would make up any losses that the stations might incur during the duration of what he called "the experiment." As well, someone else (Stevenson suggested the federal or provincial governments) would have to bear the cost of any needed capital or repair expenditures. These conditions were to apply if the elevators would have been closed, except for the necessity of co-operation with the experiment.

Hodgins had attempted to work with the federal government to see the project go forward. With grudging co-operation from the railways and the Pool, and with farmers becoming aware their options were fast closing, Hodgins signed a letter of intent with John Crosbie, the federal transport minister, on April 24, 1987. The letter was an agreement between the two levels of government to proceed with negotiations on the road/rail short line project. Crosbie made one small amendment to the letter. He crossed out the word "immediately".

The federal actions to remove any urgent status from the project took their toll. On June 10, 1988, Douglas Tulloch, Dummer-area farmer and secretary for the area rail retention committee, wrote to the National Transportation Agency, the successor to the Canadian Transport Commission. He protested the newly imposed abandonment order for the Avonlea subdivision, which was now to take effect on November 28, 1988. He pointed out that farmers who were by this time waging a losing battle with successive years of drought and grasshoppers, were not in a financial position to haul grain to distant elevators. He also denied Garf Stevenson's assertion that adjacent points could handle the extra grain that would result if Truax and Parry were shut down. Since the retention committee only heard about the abandonment order through the "grapevine," Tulloch closed the letter by stating, "our committee would appreciate receiving copies of all future orders affecting the Avonlea subdivision."

The federal government responded. MP Len Gustafson informed the committee that a one-year deferral of abandonment was granted to allow time to implement the road/rail demonstration project. Unfortunately, the order was not sufficient. The committee was told by Ron Weik, Wheat Pool transportation co-ordinator, that the CNR still planned to shut down rail service on November 28, 1988. Should this happen, elevators on the line would be closed. On October 26, 1988, Tulloch wrote to the new transport minister in Ottawa, Benoit Bouchard, to press for a proper stay of execution of the abandonment order. Though progress was being made on the road/rail project, the committee knew the elevators had to remain in service until the short line was a reality.

The federal government let the clock tick until the eleventh hour. On November 17, 1988, nine days before the abandonment order was to come into effect, it was amended to November 28, 1989. Though the Fife Lake subdivision, from Coronach to Big Beaver, had by this time been abandoned, the stage was set on the Avonlea and Colony subdivisions for the formation of Saskatchewan's first short line railway.

Looking Back

A year of hectic work followed. The Southern Rails Co-operative began operations in November, 1989. This paper relates the story of how Southern Rails came into existence from the perspective of those who started it. Readers can form their own conclusions. Still, a couple of themes seem clear. Though the co-operative was to have many struggles to come, it stands as an illustration of how farmers, who put into action their belief in the inherent efficiency of branch line railways, would reap the benefits for themselves and their communities into the new millennium. Further, this story shows the need, and the potential, for resistance.

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SECTION 5
CHEMICALS

Agricultural Chemicals and Agri-business

Greg Argue, Bob Stirling and Polo Diaz

This article considers the tentative hypothesis that the farm population in Saskatchewan is becoming increasingly deskilled. In this case, the hypothesis comes from the observation that widespread adoption of chemical weed control by Saskatchewan farmers following World War II represented a major shift in the use and control of knowledge-based technologies on the farm.

One might argue that the knowledge of any farm technology involves merely experiencing the technology's effect. That is, one "knows" a herbicide by applying it and, as a result, weeds are killed; similarly, one "knows" summerfallowing by carrying out the summer cultivation practices and, as a result, weeds are killed. But the knowledge of a technology can obviously go deeper than its mere instrumentality. One can know a herbicide a number of ways: by having invented it, by understanding how it is made, by having the experience of making it, by knowing the chemical formula for the herbicide, and by understanding all or many of the precise biological processes that go on when it kills weeds. Similarly one can know the mechanics of soil cultivation through practice as well as the agronomics of soil, the characteristics of weeds (their root systems, growing habits, strengths and weaknesses) and how they are best mechanically destroyed.

Obviously, most farmers using herbicides have only a "thin" knowledge of farm chemicals, basically knowing simply that "it works," most of the time, if you follow the directions for application. Similarly, farm people who use cultural practices might be only following community "rules of thumb" ("if Tansy Mustard gets too high you can't get a good kill with a deep tillage cultivator," or "in a wet spring, till the soil once before seeding to get an initial kill of weeds," etc.) without actually understanding those practices. In this sense, both cultural practices, that is, the non-chemical practices of growing crops, and agricultural chemical (AgChem) technologies involve a thin understanding of the effects of off-farm inputs, which the farmer employs at his or her discretion; nevertheless, the discretionary potential for variation of the former appears to be much larger than that of chemical herbicides. For example, the *Guide to Farm Practice in Saskatchewan*, until 1987 the standard provincial extension reference manual for farmers and agronomists, views herbicide use as only part of a much larger package of cultural weed control practices. In essence, chemical herbicides have been relatively narrow in their scope of possible applications. However, there are many variations of cultural practices that have been shown to work; sometimes they are well adapted to rather specific weed control problems and growing circumstances (Saskatchewan Agriculture, *Weed Control in Cereal, Oilseed, Pulse and Forage Crops*). Consequently, the potential for deep knowledge of cultural practices was, and is, larger than for AgChems. To the extent that the use of AgChems usurps the use of other weed control practices, the potential for the expansion and application of other knowledge is, of course, reduced. This does not mean that farm people have been inactive in attempting to develop a deep knowledge of AgChem technology but the attempt is less likely to be successful compared to cultural practices.

The situation with respect to knowledge control of the two technologies is straightforward. The AgChems supplied by the major corporations, and in general use in Saskatchewan agriculture, are typically licensed and patented thus restricting knowledge and production of them. The potential for experimentation by the larger community is limited by the company's capacity for product protection and by the licensing procedure maintained by the state for AgChems, requiring a heavy investment in research and development. In effect, without significant state assistance, the larger farm community is cut off from the knowledge and development of AgChems. Conversely, there are no patents for crop rotations, summerfallowing and other cultural practices, experimentation is relatively cheap and widely undertaken; and much of the research in this area has been undertaken by the state through universities and experimental stations and is made publicly available. While the machinery necessary to undertake the cultural practices may be patented, and can be very expensive, it is often machinery that is necessary for other essential farming operations and can be adapted fairly easily for a range of tasks. Moreover, it doesn't "disappear" once it is used which means that many can examine it carefully and study its design and use. It is important, however, to keep in mind that mechanical and AgChem technologies are not mutually exclusive. In fact, large-scale mechanisation of capitalist agriculture has encouraged the widespread use of AgChems.

This article examines the deskilling thesis by focusing on the historical development of AgChems and the AgChem corporate sector, followed by an analysis of how the farm community has attempted to exert some control over AgChem knowledge. In addition, the article discusses cultural farming practices on the prairies, looking briefly at the historical development and present practices, including an assessment of how and why the farm community is more successful in controlling knowledge in the area of mechanical rather than AgChem technologies.[1]

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1. We do not deal with the more recent rise of biotechnology which some (e.g., Lewontin, 2000) would see as a qualitative leap from previous farm technologies. It can also be seen as an extension of earlier processes of deskilling in agriculture, some of which are described in this article.

Agricultural Chemicals

The technology or science employed in furthering capitalist agriculture has produced chemical weed control products. The use of chemicals for agricultural purposes however, is not a recent practice; in fact, there has been a long history of agriculture chemical use in pre-industrial societies. In 470 BC Democritus recommended sprinkling plants with pure amurca[2] of olives without salt (Mason, 1928:1). It was recommended to Scottish farmers in the early 1700s that 10 or 12 bushels of salt applied per acre of wheat in the fall would help control weeds (Smith and Secoy, 1976:595). Copper sprays were recommended for mildew in 1861. In 1882 Bordeaux mixture was found to be an effective fungicide for grapes (Mason, 1928: 5). Smith claims that before 1850, some 24 inorganic and 20 organic substances including salt, mercury and copper salts, sulphur, arsenic, nicotine, tars and oils were likely being used effectively (Smith, 1978). Though these chemicals were used in agriculture, they were primarily produced on the farms and were not part of capitalist relations.

The machinery for applying AgChems also has a fairly long history of development. The precursor to modern chemical spraying equipment was the "wisk-broom" used until the late 1800s and then replaced by more complex hardware. In fact by 1910, the major pieces of equipment had been developed which would later allow for the spraying of prairie farmland. These developments included spray nozzles in the 1860s, the backpack applicator in 1874, ground drive sprayers in 1887, the power sprayer in 1894 and in 1911 the introduction of the pressure regulator and spray gun (Lodeman, 1897: 198).

The development of the chemical industry since the rise of capitalism in the late 1700s has been heavily influenced by its link with scientific laboratories as well as state patent and license laws. Industry took the scientists' knowledge of chemical compounds and placed this "know how" within the industrial process. This early association between science and the chemical industry is illustrated in the 1790s when a surgeon of the French royal family, after winning a prize from the French Academy of Sciences, set up production of sulphuric acid and soda (DeBresson, 1987:99). These ingredients produced alkali dyes for the emerging textile trades of the Industrial Revolution. With this discovery and the accompanying patent, he gained private appropriation of the product of science.

This process of discovery, patent granting and industrial production was to become the pattern in the chemical industry. In 1856, aniline dye was discovered by a 19-year-old English student of chemistry. Following the discovery and granting of patents, he began producing aniline in a factory (ibid.).

A German nationalist, Nikoden Caro, furthered the link between science, industry and engineering when he founded an early technical school, which provided trained technicians to the chemical industry. In addition, he wrote a German patent law, which to this day, remains as the model for scientists to protect their discoveries. Caro eventually became head chemist for what was to become BASF (currently among the top 10 AgChem manufacturers in the world), and later, the I.G. Farben company of Germany (whose owners played an active role in structuring the economy and politics of Germany during the 1930s (Abraham, 1989; Gossweiller, 1989). In essence,

> Modern science was not so much the outgrowth of traditional scientific activity in academic establishments, like Oxford, Cambridge and the Royal Academy; rather it was the

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[2] Amurca is the water residue left after oil is drained from crushed olives.

> product of the activity in the science clubs, stimulated by the demands of engineers and entrepreneurs in growing industries. Science and technology are integrally linked as science depends on technology for its tools whereas there are numerous questions that technology ultimately asks of science (DeBresson, 1987: 102–4).

In effect, industry poses the questions which science attempts to answer either directly or indirectly through science using industry-created hardware. "Scientific knowledge is a socialized form of shared knowledge. Capitalist production however requires that social knowledge be privately appropriated" (DeBresson, 1987: 108). In other words, while science fosters the free exchange of knowledge, capitalism "alienates" this knowledge by screening shared data with an eye for profit potential that is accomplished quickly by dedicating large quantities of human resources to the process. In summary, science and industry are closely related not only in terms of sharing personnel but also in sharing access to information generated by science. This relationship is obvious when we consider the case of the introduction of 2,4-D on the prairies.

The Case of 2,4-D

The first major agricultural herbicide, which found widespread acceptance on the prairies, was 2,4-D. First introduced in Saskatchewan for field trials in 1945, by 1950, 8.2 million acres of cropland were being sprayed with it. Not only did its use usher in the beginning of chemical agriculture on the prairies but also it changed cereal grain farming. In fact 2,4-D "was to revolutionize agriculture in Western Canada" (Smith, 1981: 19). Nowhere was this more apparent than at the Regina Research Station where "the cultural studies that had commenced in the early 1930s and continued until 1945 were terminated in favour of the chemical weed control experiments" (ibid.: 21).

2,4-D and MCPA are the best known examples of so called "hormone weed killers" which were developed in the U.S. and Great Britain at about the same period of time. Not only are both compounds closely related chemically and have similar agricultural uses, but more importantly these chemicals "marked the beginning of the post-war chemical revolution in crop production and the birth of the agro-chemical industry as we know it today" (Kirby, 1980: 1).

These compounds were not the first agricultural chemicals used that received greater acceptance than previously used chemicals (ibid.: 2). This acceptance was partly because of their safety, selectivity, low cost and ease of application but also because of the increasing penetration of farming by capitalist relations. From the market-oriented family farm to the state, the technology represented by 2,4-D and MCPA was readily adopted.

Members of the academic community were influential partners in the legitimisation process of 2,4-D not only as members of larger groups such as the state's "Weed Committee" but also as independent actors. Individual scientists were, in many cases, the integral link between state, industry and family farms.

To be sure, science and industry now have a close relationship, but this was not always the case. Agricultural scientists in the past warned farmers about using the "secret formulations" provided by chemical companies (Large, 1962: 332); this tension between science and industry eased over time. Similarly, while farmers were aware and apprehensive of the close relationship between science and industry, they had their fears eased through applied science—as expressed through experimental farms and field trials. This is evident in an early advertisement promoting the "Correspondence School of Scientific Farming," which listed prominent agricultural scientists as its instructors and asked if the farmer would not like to "Talk things over with the experts—the real kind—not the mere theorists?" (*Grain Growers Guide*, 1911: 27). The implication was that only applied science should be heeded. This was echoed in the biography of T.K. Pavlychenko, an eminent plant scientist and professor of plant ecology at the University of Saskatchewan, who "was firmly committed to applied research and improving the capability of farmers to cope with weeds and increase crop production" (Bubar and Morroson, 1980: 438).

Pavlychenko noted that the tremendous surge in the amount of applied weed research had meant a great change for the fledgling field of "weed science"[3]—which was driven by the desire to increase farm production at a low cost. He also noted a fundamental change in how weed control was accomplished as weed science had moved from a culturally defined activity to one which used a "highly complicated science" of which chemicals were a central component (ibid.: 438). Two months after writing this, Pavlychenko took a position with the U.S. chemical company ACP as director of agricultural research in Western Canada and the western U.S. But before leaving the University of Saskatchewan, he attempted to negotiate an arrangement with the University, which would allow him to remain as a teaching professor and supervisor of the Weed Laboratory while an employee of ACP. However, the University Board of Governors rejected this arrangement. Pavlychenko left the University but continued to maintain the good rapport that he had established with dealers and farmers by participating in field days, short courses and extension activities in Western Canada while forging a closer relationship to the agribusiness sector. Pavlychenko's career illustrates the link between science, industry and farmers.

Recent, accurate data on AgChem sales is hard to find. During the 1988–89 agricultural season, herbicides represented 79.4% of total sales of chemicals for "pest" control products (weeds, insects, rodents, fungi, livestock pests, soil fumigants, and growth regulants, both on farms and in homes and gardens) in Canada. In Western Canada, herbicides probably accounted for 87.1% of the total (Gustafson, 1989). The chemicals identified in Table 1 were generally not in use prior to World War II. However, by 1960 Saskatchewan farmers applied 3,261,000 pounds of 2,4-D (to 11,391,000 acres for an average rate of .28 pounds per acre) as well as 269,000 lbs. of MCPA (to 780,000 acres for an average rate of .35 lbs. per acre) and 20,000 lbs. of TCA. The use of these chemicals has varied considerably. While their use has generally increased, the amount of 2,4-D used in the dry and economically depressed conditions of the mid-1980s was scarcely higher than during the mid-1960s. Nevertheless, the rate of application appears to have gone up. By 1975 the average application rate was .40 lbs. per acre for 2,4-D and .50 lbs. per acre for MCPA (Energy Research Unit, 1978). Saskatchewan farmers used Dalapon from the mid-1960s until 1980, however a more significant shift was the adoption of the "Wild Oat herbicides" (e.g., Carbyne, Avadex) during the mid-1970s. Again, their use was quite variable but the trend to the early 1980s was clearly upward (over three times as much was used in the exceptionally heavy year, 1982, as in 1975). Then a major increase in the use of chemicals began in the 1980s as farmers followed industry and state pressure to adopt no-till or reduced-tillage methods of weed control. From 1980 to 1990, total acres treated with all herbicides rose sharply from about 13 million to almost 25 million acres.

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[3] In 1943 there were 69 articles on weeds; in 1949 there were 600 (Schideler,1967: 252).

Table 1. Use of Selected Agricultural Herbicides in Saskatchewan

Year	2,4D 000s of pounds	M.C.P.A. 000s of pounds	T.C.A 000s of pounds	Dalpon 000s of pounds	Wild Oat Herbicides 000s of Acres Treated	Total Acres All Herbicides 000s of Acres Treated
1960	3261	269	20			
1961	3162	238	8			
1962	4655	353	11			
1963	4260	299	15			
1964	3766	232	18			
1965	4679	296	64			
1966	5059	351	104			
1967	4519	385	139	43		
1968	5757	524	161	27		
1969	3491	545	143	48		
1970	2180	411	132	22		8008
1971	2722	596	182	67		
1972	4851	824	219	26		
1973	4222	849	235	45		
1974	5129	1100	392	77		
1975	3488	837	371	33	3481	
1976	3600	787	302	20	4431	
1977	4583	1142	254	20	5871	
1978	5562	1279	190	20	7368	
1979	5364	1303	247	29	8653	
1980	3591	1008	483	9	8100	13205
1981	5110	1420	328		6999	
1982	4740	1171	247		11197	
1983	4279	1393	280		7990	
1984	4612	1179	280		8577	
1985	4667	1087	187		6552	
1986	5886	1212	355		10540	
1987	5148	1479	309		5352	
1990					10000*	24824
1993					12000*	
1995						26814

*Estimated. Beginning in the late 1980s it became difficult, or in some cases impossible, to obtain accurate data.

Sources: Sask Ag Stats; Statistics Canada Cats. #9 5-179-XPB, 95-371, 96-709, 96-909.

The Corporate Sector

The broader chemical industry was originally instrumental in developing and commercialising Agchems to producers. The industry did incur opposition but it struggled diligently to penetrate the farm sector. For example, when Bordeaux mixture was first discovered, it was prepared on the farm. For the emerging chemical industry, chemical production was "a job that could be done better and more cheaply in chemical works than on the farm" (Large, 1962: 328–29) because a chemical works uses

> standard materials ... manufactured from registered formulae by the chemical companies who are in a position to do it cheaply and properly. While many of the materials can be made on the farm, it is generally safer to buy them ready-made from reliable manufacturers (Mason, 29: 36).

The drive for regulated standards at a "cheap" price was incorporated by industry in this campaign. However, companies also actively pursued sales in a manner that exaggerated the effect of their products. Companies found that it was easier to extract a surplus from farmers if they were sold "compound products ... and even better to sell them mixtures under fancy trade names and of undisclosed compositions" (Large, 1962: 252). These approaches to product sales were used effectively by the chemical industry. By 1947 there were 30 preparations of herbicides containing 2,4-D (Schideler, 1967: 252).

Companies used science to identify saleable products and the case of 2,4-D was no different. R. Parknoy, a chemist for the American firm, C.B. Dodge Company, synthesised 2,4-D in 1940 (Kirby, 1980:35) and published his findings in the scientific *Journal of The American Chemical Society*. Two scientists who worked for the company American Chemical and Paint (ACP) became interested in Parknoy's data since they believed 2,4-D had potential biological applications.

While in this case the transfer of "scientific" information to profit-pursuing companies was done through shared knowledge in a scientific journal, the potential agricultural application of 2,4-D was identified by the state. When U.S. Army researchers at Camp Detrich ordered 2,4-D from ACP for testing in the war effort, the chemists at ACP were alerted. The ACP chemists were aware of the Army's biological warfare work at Camp Detrich and realised the potential agricultural application of the chemical. With this is mind, ACP filed for a "use patent" on 2,4-D (ibid.: 39).

ACP began commercial marketing of 2,4-D in 1945 under the brand name "Weedone." Many other companies attempted to market 2,4-D; however, the "use patent" granted to ACP held up in court. This allowed ACP to sue others for breach of their "use patent" and allowed them to extract licensing fees from other companies wishing to market 2,4-D products for agricultural use (ibid.: 41).

During the 1980s, about 40 multinational companies made virtually all of the world sales of agricultural chemicals. The top four accounted for about one-third of total sales while the top 15 accounted for over 80%. By 1996 the top 10 companies controlled over 80 percent of world sales. In order, they were Novartis, Monsanto, Zeneca, AgrEvo, Dupont, Bayer, Rhône-Poulonc, Dow AgroSciences, American Home Products and BSAF (Rural Advancement Foundation International, 2000, 1997). Since then, there have been further mergers. None of the companies are Canadian. Apart from "formulation" or mixing, and a couple of 2,4-D plants in Alberta, little manufacturing goes on in Western

Canada (Horner, 1980). Nor do all of the major multinational companies have a strong presence in the Western AgChem market. In the 1980s about 12 multinational companies controlled virtually all of the sales of original ingredients. Of those, Monsanto (U.S.), Hoechst (Germany), DowElanco (U.S.), Rhône-Poulenc (France) and Sandoz (Swiss) were, in approximate order, the top five and they probably controlled over 75% of the Western Canadian market. Given the subsequent mergers, perhaps as few as four companies now control three quarters of the Western Canadian market.

The structure of industrial sectors, like the AgChem industry, that are dominated by a few large firms is called oligopolistic. Firms in this structure typically do not compete over price and this appears to have been true for the Western Canadian AgChem industry (Horner, 1980). But this does not mean that competition in other areas or between sectors declines. It becomes extremely important for a firm in the AgChem industry to have complete control over an effective chemical, including the capacity to convince the state and farm consumers of its merits. Patents and licenses—as well as brand differentiation—are crucial to the sector and the industry spends large sums on advertising, and securing its relationship with the state. Similarly, the firms are increasingly engaged in extension work with farmers and state extension workers as part of their effort to defend and/or expand market share (for the example of Monsanto, see Forrestal, 1977).

The State

Historically, Central Canada took a special interest in the prairie region as a supplement to the exhausted agricultural frontier of Canada West during the mid-1800s. Thousands of newly settled prairie family farms would produce staple commodities, mainly wheat, to be exported through Central Canada to world markets, while providing a market for Central Canadian manufacturers. The importance of an export-driven grain economy to the national purpose placed a high emphasis on increasing the volume of grain production, an emphasis that continues today.

Although the main advocates and beneficiaries of opening the West were private commercial and industrial capitalists, it was the state that organised the campaign through what has become known as the "national policy" (Fowke, 1957). Its first purpose—creating an agricultural hinterland—proved to be a difficult challenge, which did not blossom until the early 1900s. Gradually the state developed extensive agricultural research and extension facilities (experimental farms, dominion research stations, universities, agricultural scientists and professional agronomists, extension services, and so on) to help the new prairie farmers cope with their particular farming problems such as drought, insects and weeds. The dryland farming movement along with crop rotations and summerfallow were an integral part of the state's research and training effort to enhance farm production and to help make the frontier, and by extension, the Canadian economy, viable.

World War II and the years immediately following brought increasing demand for prairie commodities from Britain and other European countries whose own production or normal sources of supply had been cut off. Commercial and industrial capital as well as farmers stood to benefit if the state continued to emphasize increasing farm production. Given this opportunity and its historic involvement in the frontier and in facilitating staples production, it is not surprising that the state was instrumental in the development of AgChem technology. From testing and regulation to training and extension, it played a major role in its introduction and legitimisation.

Perhaps the most important initial thrust by the state was its interest in chemicals as part of the war effort. There were two aspects to this. First 2,4-D and MCPA were potential agents for crop destruction (Kirby, 1980: 1). These compounds could be applied to the enemies" crops—depriving them of a food supply. Secondly, there was the belief that these chemicals could increase food production. The American government had established Camp Detrich as the testing centre for its biological warfare programme, testing over 1,000 chemicals for their effects on living plants (ibid.: 15–19). Increased food production was a major consideration for Great Britain, which felt vulnerable because of its dependence on food imports. Of course, wartime research—crop destruction or production—was intended to enhance the chances of victory. But the research, which took place on both sides of the Atlantic, was not restricted to state employees. For example, the Jealotts Hill Agricultural Research Station in England, which was working on the potential for increased crop production, had a senior corporate scientist, W.G. Templeman, who was an employee of Imperial Chemicals Industries, attached directly to the Jealott Station (ibid.).

In general, what the war contributed to the "new" technology of agricultural chemicals was scientific discipline. Screening a large number of chemical agents required massive human resources dedicated to research. This was accomplished through the use of scientists and technicians and the application of research capital provided by the state through the military, and to academic communities. The agricultural potential of this military research was not lost even though there were severe restrictions on information regarding the war effort. Restrictions imposed by the war regarding dissemination of information did not apply to data dealing with the agricultural use of chemicals.

By 1945, the Canadian agricultural research stations participated in the field tests for 2,4-D, which involved the work of 30 "co-operators" with 140 experiments in the U.S. and 36 in Canada (Schideler, 1967: 251). The testing was easy to accomplish considering that the infrastructure of experimental stations and agricultural colleges had already been well established to further the development of "scientific farming."

The "success" of the testing programs and the dissemination of information can be seen in the dramatic acceptance of chemical technology by farm producers. Within five years of the first testing, Canadian farmers were applying 2,4-D and MCPA on over 8 million acres of cropland.[4] This transformation from virtually no crop land sprayed was the result of a concerted effort by the state and private industry that found acceptance in the farm community.

In Saskatchewan, the provincial Department of Agriculture was the leading agency in integrating chemical technology and prairie agriculture. Previous to introducing 2,4-D on the prairies, the department purchased "altracide"—a non-selective inorganic salt—for resale to rural municipalities. This "chemical" was used in the control of noxious weeds described in the Noxious Weed Act (Saskatchewan Agriculture, *Annual Report*, 1944:70). The province made effective use of local governments to disseminate chemical information and technology to help implement the Weed Act.

When 2,4-D became commercially available, the provincial government moved quickly to legitimate its use in agricultural production. One important initiative brought together National Grain Limited (the Canadian branch of a U.S. company), the University of Saskatchewan and the Dominion Experimental Farms at Indian Head and Scott to provide demonstration sites (Saskatchewan Agriculture, *Annual Report*, 1947: 82–83). This linked private industry, two levels of government and the University structurally to demonstrate and legitimate the benefits of chemical weed control.

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[4] By 1966, 16,165 million acres were treated with 2,4-D or MCPA. Saskatchewan farmers followed a similar pattern. For detailed data on "Acres Treated" see Energy Research Unit (1978: Appendix IV).

The Canadian government's Experimental Farm service was also active in the distribution of knowledge about agricultural chemicals through the use of test sights. "By 1915 the federal government had started to develop Illustration Stations where neighbours in the community would be drawn to (each) Illustration Station. In this way it was hoped farmers would emulate the work being carried out there" (Johnson and Smith, 1986). After the introduction of 2,4-D these Illustration Stations were heavily used for the demonstration of chemical weed control.

Similarly, but with a more direct information focus, the Saskatchewan Advisory Weed Council was formed in 1947 to deal with the introduction of 2,4-D. This group was composed of the Government of Canada Experimental Farm Service, College of Agriculture (University of Saskatchewan), Saskatchewan Department of Agriculture, Agriculture Representative Service, Field Crops Branch, Department of Highways, Saskatchewan Co-op Wheat Producers (now Saskatchewan Wheat Pool), United Farmers of Canada (Saskatchewan Section) and the Saskatchewan Association of Rural Municipalities. The central function of this council was to review research but more importantly, it was to pass the information on to farmers. For example, one of the council's first actions was to produce 30,000 pamphlets entitled "2,4-D Agricultural Use in Saskatchewan" for distribution to farmers (Saskatchewan Agriculture, *Annual Report*, 1947: 67).

The council's role, however, was not limited to work in Saskatchewan: it also sponsored the first Western Weed Conference in 1947. This was an information-sharing body, which functioned on a regional, rather than a provincial basis. This Conference included related councils not only from the Canadian prairie provinces but also from the wheat growing areas of the western U.S.[5]

Clearly the state played an important role in this legitimisation process. For example, in 1967 the Saskatchewan Department of Agriculture presented 36 sprayer demonstrations and 42 addresses to meetings and short courses, attended 12 organisational meetings and prepared 3 television programs and "numerous radio tapes and press releases to extend weed control information" (ibid.: 150).

The war effort had perfected many new products which farmers could use to enhance production, including new chemicals to control pests and weeds. The state's research and extension apparatus swung to this new technology as a means to maximise production. Farmers were urged to farm "scientifically', which meant adopting the latest technologies offered by the non-farm, agribusiness industries, including AgChems. By the 1970s the state agencies were encouraging farmers to treat farming as "a business"; as a result a good deal of effort was directed at showing how new chemical technologies were cost efficient. As part of this direction, particularly with respect to AgChems, the state maintained its patent laws while enhancing its registration and licensing regulations.

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[5] T.K. Pavlychenko served as the representative of the Advisory Council on the North Central Weed Conference (Schideler, 1967).

As concerns about the effect of AgChems on the environment and human health grew, so did the state's licensing bureaucracy. By 1980 it was estimated that the cost to an AgChem company for "research and data accumulation required in the development [and registration] of a new pesticide [was] in the order of $20 million" (Horner, 1980: 201). This, coupled with the fact that AgChems, produced by very large multinationals, entered Canada duty-free, has meant that Canada has seen little domestic development or production of AgChems and no establishment of Canadian firms, a condition which the Canadian state either accepted or had no ability to change.

The Farm Sector

The change in agricultural labour requirements gives an indication of the rate of adoption and one of the effects of the new technologies in agriculture. While in 1830 it required 58 hours of labour to cultivate and harvest an acre of grain, by 1980 this had shrunk to two hours (Kirby, 1980: 5). This represents displacement of labour by technology. Moreover, it represents a radical change in the composition of the agricultural community.

Chemical technology was one of the instruments of this change. The introduction of 2,4-D fundamentally changed how farming took place on the prairies and in some cases marked the end of the need for crop rotation (ibid.). Before World War I, the *Grain Growers Guide* espoused the value of crop rotation saying in one article that besides maintaining the condition of the soil it "removes the risk involved in staking everything on one crop" (1911: 12). This article blamed the farmer if crop failures followed the widespread adoption of a mono-culture system of farming. "When man undertakes, in defiance of natural law, to grow only one crop, who is to blame when every two or three years his particular crop meets with disaster" (ibid.).

Further, it appears that one of the consequences, at the level of the farm, of adopting 2,4-D technology was a drift towards a monoculture. If one of the uses of crop rotation is weed control and technology change to the point where rotation, as the "technology of weed control," is replaced by chemicals, then a major shift has taken place.

But what pushed farmers towards the use of chemical weed control? It was widely believed that "scientific farming" was the way for the farmer to obtain a better way of life. It was not just the use of chemicals but rather the technology represented by 2,4-D that provided cost advantages for the farmer. There had been farm chemicals around previously which provided selective control of weeds in cereal crops; however, their high cost dissuaded farmers from their use (Schideler, 1967: 243). The introduction of "hormone" weed killers overcame the cost disadvantages of other agricultural chemicals. For the farmer, the challenge was not to kill weeds per se, but to reduce unit production costs by increasing the volume of crop grown (Mason, 1928: 1).

Farmers' organisations were also active in the acceptance of the new chemical technology. They did this because of a belief (perhaps a faith or "dream') in what science could bring to their members. Two grass-roots farm organisations that participated in the Saskatchewan Weed Council were the Saskatchewan Co-op Wheat Producers and the United Farmers of Canada. It seems probable, given the broad credibility that these organisations held among farmers after World War II, that their participation enhanced farmers "buying in" to chemical usage on the farm. However, farm organisations did not participate in this process without the willingness of their farmer members. In fact, farmers bought into and pursued with passion the notion of scientific farming. In retrospect, one might hypothesize that farmers did not fully understand the implications of adopting this new technology.

E.A. Partridge, arguably one of the most influential farm leaders in the first part of the century, claimed that an "objective of organised farmers is to be the study of those economic and social problems having a bearing on the material prosperity and happiness of farmers..." (Partridge, 1911:7). But this was fuelled by the belief that

> Country life will never be what it should, and the farmers of Canada will never hold their proper place in the world until the agricultural industry is organised to the same degree of perfection as the industries which are carried on in the towns and cities. The progress of science and invention ... has brought about an industrial revolution ... organisation is the keynote of the age and is as essential to the success of the farmer as to any other commercial pursuit (Ward, 1911: 10).

For farmers, science and organisation were desired goals in order to obtain prosperity. Prosperity was to be the sign that farmers had reached this greater good:

> The prosperous farmers of the country are those who have taken advantage of every possible means of saving time and money. On their farms you will find gasoline pumping, engines, telephones, the most modern and practical agricultural implements and every other known device that saves time and makes men and things move and produce more quickly (Schwamm, 1912: 21).

Attaining the "good life" as suggested in this article was to be through the application of science.

As noted, the emerging technology of modern Canadian agriculture is directed towards greater production of marketable crops. In contrast, the practice of crop rotation was one of the core techniques of feudal society. Crop rotation accommodated the subsistence farming of that period whereas "capital-intensive agriculture ... [is] concerned only with the year's marketable product in comparison to the products and work put into the earth at the beginning of the season" (ibid.: 29). The "national policy," while ambiguous and contradictory, established export-driven, small family farms that switched prairie agriculture from subsistence farming toward capitalist, market-driven farming. Even though "subsistence" was an important practice in the new family farms, their goal was first and foremost to produce for the markets, and to produce as much and as cheaply as they could. These farms at once incorporated the earlier social organisation of peasant farming based on a family unit while being capitalist in their orientation and context. The family farm unit provided most of the labour and the capital while their livelihood depended upon there being a positive difference between costs and revenues at year end. Since there were thousands of family farms, no single unit could influence the market. In effect, they were price "takers', each farm unit in competition with all of the others. In this situation, one way to survive and grow was to quickly adopt the most effective and efficient technologies so as to achieve higher productivity, and hopefully higher net returns, than other farm units; hence, there were compelling reasons in the economic logic of prairie farming for farmers to rapidly adopt AgChem technology, reasons that continue today. As Fairbairn notes:

> Private ownership patterns, coupled with fast-paced pioneering and the frontier spirit, produced a situation without the deep-rooted traditions or other forms of community

> pressure that could encourage careful nurturing of the land… In a simpler age, these farms provided a good living for families. But as farming became more complex and more dependent on technology, that farm size became inadequate, creating crippling economic problems for the farmers (1984: 9).

There are also non-economic reasons for farm families to adopt new technologies including AgChems. The agrarian ideology on the prairies embraced a number of views that serve to encourage technology adoption. Farmers see themselves as being "the breadbasket of the world," "feeding hungry people the world over," indeed an onerous responsibility that leaves little moral room for wasting resources or productive possibilities. Entrenched in the broader societal pursuit of the fruits of modernity, the progressive wing of the agrarian movement embraced "scientific" farming as a logical extension of "scientific" socialism and the development of a new co-operative commonwealth. These beliefs were not seriously challenged until the rise of organic farming and the cost-price squeeze in the 1980s. Still, the farm community continues to be relatively enthusiastic about the adoption of AgChem technology. In part, what has happened is not a reduction in the use of AgChems but a change in the definition or meaning of what they represent. Pesticides, including herbicides and insecticides, have now become crop protection products. Crop protection products are considered a necessary component in feeding a hungry world (Ibid.: 49).

Few of the new immigrant settlers to the Prairies actually had a good knowledge of farming (Voisey, 1988). Drought, uncertain markets, poor transportation and a lack of understanding of cultural practices hampered production. Weeds also became a problem but after a period of on-farm and state research and extension it became possible to minimise their impact. The weed problem not only threatened individual farmers but also the potential economic benefit entailed in the "national policy." The introduction of the hormone weed killers 2,4-D and MCPA after World War II went a long way to eliminate or reduce the threat from certain weeds. Once susceptible annuals were removed however, the more persistent annuals (e.g., wild oats) and perennials (e.g., Canada Thistle, Quackgrass) took their place. Based on the positive yet limited success of hormone weed killers, farmers looked to the state and the industry for other chemicals to kill these "superweeds." By the middle 1970s the new chemicals were being adopted (a brief history is provided in Horner, 1980).

So effective were these chemicals that it became possible to replace the summerfallow component in a crop rotation or to eliminate summerfallowing altogether, using the chemicals to effectively defoliate the land in a continuous cropping rotation. This trend is obvious in the gradual decline in the use of summerfallow on Saskatchewan farms after about 1980.

After the initial settlement period in the Prairies, problems of weed control and occasional drought became serious. The "Dryland Farming Movement" initiated in the United States was introduced to Saskatchewan and heavily encouraged by the provincial government, the University of Saskatchewan and the Dominion Experimental Farms. It involved substantial use of summerfallow, leaving fields uncropped on alternated growing seasons so that regular cultivation could (it was argued) destroy weeds and enhance the store of soil moisture. The judicious selection of more complex crop rotations (but almost always involving some summerfallow) was another strategy for weed control. The proportion of summerfallow never reached 50% but it became very common practice to seed grain crops (e.g., wheat, durum, barley, as well as flax) onto summerfallow (for example, over three-quarters of wheat seeded from the mid-1960s to the late 1970s typically was seeded on summerfallow). The early introduction of chemical herbicides appears not to have been considered to be an alternate to the traditional "cultural" practices of summerfallowing and selecting crop rotations to combat weeds. However during the 1980s practices began to change. Both the state and the companies mounted a major campaign[6] against summer-fallowing which, it was argued, prevents refurbishing the soil with organic matter and hence enhances soil degradation. In recent years, the trend has been to less summerfallow and a definite decline in the practice of seeding grain crops onto summerfallow. Presumably the resulting weed control problems are increasingly being handled by chemical herbicides and as well, perhaps, with better crop rotations (Beckie, 2000).

An Illustration

The AgChem "Roundup," a flagship in Monsanto's collection, has, over the years, provided examples of the difficulty that farmers have in controlling the AgChem technology. The corporate interests appear to stand in opposition to the development of fundamental local knowledge and control.

Even though farmers can't easily change the chemical formulation of an herbicide, they can and do experiment with its application. By the end of the 1970s, some had discovered that Roundup could be made more effective in certain circumstances by decreasing its concentration in the spray mixture at application time. Obviously this would reduce farm costs, reduce the likelihood of residual effects and other environmental problems, and make the technology suitable for introduction into a wider range of non-chemical cultural practices. But the manufacturer was not impressed with this popular finding and initially refused to retest its chemical or alter the use recommendations.

From the farmers' perspective, the price of Roundup and other farm chemicals has been quite steep. Some farmers reasoned that greater competition using generic chemicals rather than the companies' patented brands would reduce the price and a group formed near Melfort, Saskatchewan, to undertake the development and production of "glyphosate," the generic base for Roundup. They met with serious obstacles from the company and the state (Fairbairn, 1988; Rance, 1988; Stecyk, 1988). It was difficult to find out exactly what the active ingredient in Roundup actually was (apparently scientists from the Atomic Energy Commission finally successfully duplicated it under contract with the Melfort group). As well, it became necessary to go through a considerable bureaucratic maze in order to have the state judge the product's health and other risks and to have it licensed. Ultimately the Melfort group gave up before production could begin, although once the original patent on Roundup expired, other non-farm companies started to produce it.

Recently, Monsanto was able to develop a genetically modified (GM) variety of canola that was resistant to applications of Roundup, licensing the seed to farmers under a strict contract that forbade them from keeping seed to plant the following year. When a Bruno, Saskatchewan, farmer was found by Monsanto investigators to have had Monsanto's Roundup-ready canola growing on his farm without a license, the company successfully sued him (Pratt, 2001). At the same time, Roundup-ready canola does spread by natural processes and is becoming a weed in some parts of the Prairies (Rance, 2001). Further, European buyers have largely refused to purchase seed or by-products from GM canola and are alarmed at the prospect of finding GM contamination. This combination of factors shows how releasing a GM variety into a regional ecosystem can seriously challenge public varieties and local control of the related farming practices (Shiva, 1997). Monsanto is now on a campaign to introduce GM wheat.

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[6] Direct seeding is the label applied to this practice.

Conclusion

The introduction of agricultural chemicals represented a major change in how prairie farmers viewed growing wheat. Up until this point the major emphasis for weed control had been on tillage, using clean seed and crop rotation, that is, cultural practices. However, with the introduction of agricultural herbicides—whose benefits were weed control through greater ease, less cost and in less time—weed control was no longer to be obtained by cultural practises.

Arguably, herbicides also intensified farm mono-culture in Saskatchewan and the attendant costs associated with the increased dependence on the wheat economy.

As the chemical technology of the hormone weed killers replaced cultural practices, knowledge and control has been lost in the farm community. For example, a trend can be discerned: tillage equipment has been replaced by spraying equipment, the need for clean seed replaced with chemicals that kill weeds, and crop rotations and, most recently summerfallow, replaced by "chem fallow" and a grain mono-culture. This involves a change in knowledge and control for farmers. For example, "how to till" is replaced by "how to spray," "how to clean" your own seed tends to disappear along with seed cleaners on the farm, and "how to use a crop rotation" tends to fade from memory. The increasing dependence on one crop accompanies the loss of crop rotation as a cultural practice. While specialisation has its particular advantages, the benefits of diversification through mixed farming are lost. As the farmers' knowledge becomes specialised it is accompanied by an inability to identify strategies for the family farm which could potentially come from a more diverse form of agriculture. On balance, therefore, we see deskilling, a loss of knowledge and control among farm people, with the substitution of AgChems such as 2,4-D and MCPA for cultural practices after World War II and similar changes with the newer chemicals such as Roundup.

This analysis suggests that the deskilling thesis is indeed relevant to an understanding of the changes in farm work and knowledge of farm people on the Prairies during this century. Moreover, AgChems exemplify greater deskilling compared to other technologies such as machinery, marketing, buildings, etc. The relatively concentrated structure and the lack of a significant Canadian presence in the AgChem industry, as well as the unique nature of patented chemicals as a form of private property and the unusually high costs of developing and registering new chemicals, appear to have made it very difficult for prairie farm people to get to know and control this technology.

These examples warrant the conclusion that the potential for knowledge and control of chemical technology by farmers is less than that for non-chemical cultural weed control practices. However, this situation is not unique to agriculture; even the realms of household cleansing and family medication has experienced a similar trend to patented chemicals over which the individual user has limited knowledge and control.

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Sustainable Alternatives for Saskatchewan Agriculture: A Farmer's Perspective

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The purpose of this paper is to examine organic and sustainable agriculture in the province of Saskatchewan. It provides a brief description of some of the problems conventional agriculture is facing as we use up the world's non-renewable resources. The paper defines sustainable and organic agriculture. It recounts some of the history of organic farming and provides a brief profile of organic agriculture as it is practised. I profile my own farm operation to demonstrate that organic methods can succeed at least in the context of maintaining productivity and economic returns for the short term. The paper discusses the movement towards sustainability. Zero-till and organic practises are briefly compared; although unlikely companions, they have some things in common. My suggestions for farmers interested in organic agriculture will assist those wishing to move in this direction. This paper is written for readers who want a different perspective on the present and future of Saskatchewan agriculture. While organic farming is practised by a very small number of farm families, sustainable agriculture is the objective of most farmers. Day-to-day production and making a living dominate our work and lives. We do not often reflect on the larger questions about sustainable agriculture that will inevitably have to be answered. This paper proposes that a more organic agriculture be part of the answer.

Conventional Agriculture: Growth and the Law of Diminishing Returns

Highly mechanised, energy-intensive agriculture is a recent development in the history of agriculture. Since World War II, agriculture in North America has changed dramatically. Rapid mechanisation and adoption of technology has characterised this period. The number of farmers and farms has declined dramatically. Diversified mixed-farming operations have been replaced with larger and more specialised farms, and intensified livestock operations. Before the 1940s, farmers relied on a variety of relatively benign non-chemical methods for fertilising and pest control.

Almost everyone knows that agriculture in Saskatchewan is under economic stress. Fewer people are aware of agriculture's impact on the environment, that it is depleting non-renewable resources, increasing the risk of environmental crises, and impairing our future ability to produce sufficient food for a growing population. "As the major activity on our landscape, agriculture is the largest cause of environmental manipulation and alteration. Many of these impacts have long-term detrimental effects" (Scott, 1983: 8).

In my own community, soil depletion began when settlers first cultivated the land. Early pioneers say that the topsoil in the Oxbow area was in some places up to 13 inches thick at the time it was first broken. Today average topsoil is now only five inches thick. This is the result of tremendous losses from wind and water erosion.

In a 1990 federal government report, soil scientists estimated that we have lost up to 50% of our organic matter content in Saskatchewan soil (Government of Canada, 1990). Organic matter is the living and decaying plant and animal material accumulated over thousands of years on prairie temperate grasslands. It is a wealth of nutrients. Every 1% of organic matter in the top six inches of soil contains approximately 1400 pounds per acre of nitrogen (Anderson, 1995).

Soil is the source of fertility that has provided crops for prairie farmers and food for distant consumers for several generations. We have treated it like a bank account, steadily drawing out more than we put in. It is an inheritance that we are squandering without accounting for its real value. D.R. Rennie estimated that the annual cost of soil degradation in Saskatchewan was $560 million and almost $1.5 billion for the four western provinces (1985). In 1984 Agriculture Canada calculated that prairie region losses due to soil degradation were valued at 79% of farm net income (Agriculture Canada, 1994). The loss in soil fertility has been hidden largely by our increased use of inorganic fertilisers, improved crop varieties, advanced technology and better management.

But the application of fertiliser in increasing amounts will not produce parallel increases in yield and returns. There is an optimum point where an ideal amount of fertiliser produces an acceptable yield and return on investment. After that the law of diminishing returns applies, as it does to other agricultural inputs and to other forms of agri-technology. In many cases agri-input technology has completely replaced effective on-farm sources of inputs. For example, inorganic nitrogen fertiliser has effectively displaced on-farm nitrogen sources such as livestock manure or green manure. Rarely used on conventional farms, green manure legume plowdowns are a cost-effective source of nitrogen; and the incorporation of living organic matter has other soil-building benefits as well.

Conventional agriculture has resulted in large increases in productivity, but the costs are high: "With the exception of results based upon plant and animal genetics, most of the efforts that increased productivity were energy dependent. The price of doubled agricultural productivity is high: a four-fold increase of energy input" (Price, 1981).

North American food production uses vast amounts of energy and resources to produce food. Amory Lovins, examining U.S. agriculture in 1984, found that slightly more than two calories are invested in production for every calorie of food produced (Lovins et al., 1984). An agriculture based upon non-renewable fossil fuels is inherently fragile economically and ecologically. In the short term, relatively inexpensive energy costs mask the

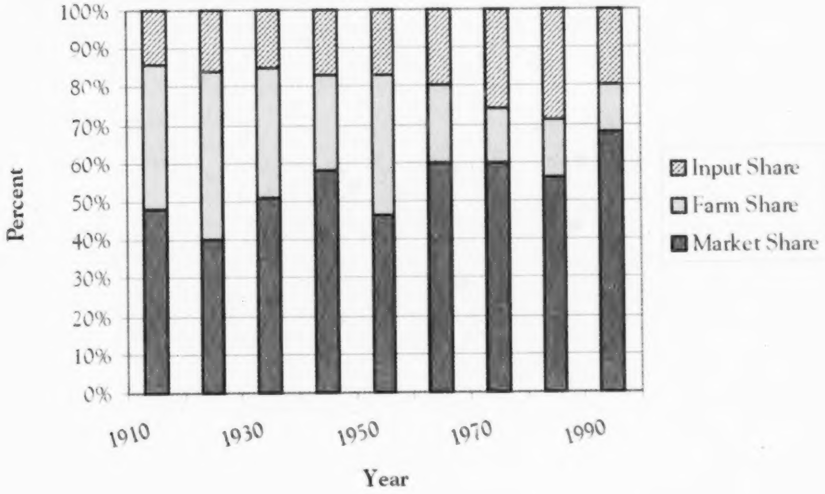

Figure 1. Marketing, Input and Farm Shares (based on data presented in Smith, 1994).

long-term impact of the inevitably of dwindling fossil fuel reserves and rising prices. What will happen to Saskatchewan's export-oriented agriculture dependent on large quantities of fossil fuels for mechanisation, pesticides, and fertilisers? We are in the middle of the continent—a relatively long way from low-cost water transportation. As farmers, our margins for profit are very narrow, and many of us cannot afford to keep up with of an evermore technologically advanced and energy-intensive production system.

Economics has been the greatest factor in determining agriculture's relationship to the land. We have substituted mechanisation for labour, and external inputs for internal solutions to on-farm problems. The result is an ever-growing farm size, excessive farm debt, dependence on off-farm income, low commodity prices, and increases in the cost of production has resulted in a cost-price squeeze that has pushed many farm families off the farm and kept many farm heirs from returning to the land.

At a Great Plains Symposium in 1994 Stewart Smith (1994) graphically illustrated (see Figure 1) what has happened to American agriculture between 1910 and 1990.

Agriculture has traditionally been thought of as one sector. In reality it is three: marketing, production and inputs, as illustrated in Figure 1. In 80 years the production sector as a percentage of all three has declined. The input and marketing sectors have taken over an increasingly greater share of the total value. This means stagnant and depressed commodity prices and increased costs of production for new technology and off-farm inputs. The approach that some alternative agriculture farmers are taking is an attempt to regain a greater share of the marketing and input sectors.

We have taken a possessive approach in developing our agricultural resources on the prairies. It is time that we learned to think as part of the prairie ecosystem. Our future lies in an agriculture based upon natural systems that are integrated with modern technology, and scientific knowledge, in the design of more energy-efficient, and more environmentally benign, farming systems that also respect the economic and social needs of farm families and communities. The management of our scarce resources requires a new vision of agriculture.

Defining Sustainable Agriculture

Sustainable agriculture must be defined as an objective. Following Wendell Berry (1996) we argue that sustainable agriculture should not deplete the soil or people. These should be the basic tenets of a truly sustainable system. Any practice that reduces or eliminates non-renewable inputs and conserves or builds soil is a step towards sustainability, but that does not mean that it is sustainable agriculture.

We do not have all the information needed to evaluate true sustainability. Yet, "sustainable" has become a catchword and is often attached to new practices or approaches whether they are truly sustainable or not.

Sustainable agriculture is an evolutionary term. Its definition will change as our knowledge of agroecology increases. Fundamental to that definition is the understanding that agriculture can not function independent of nature. Sustainable agriculture is based upon a healthy relationship between farmers, consumers, society and the environment. Meeting basic human needs for nutrition and fulfilling our need for useful, satisfying work are important objectives of sustainable agriculture.

The International Federation of Organic Agriculture Movements (IFOAM, 1991), an international organisation linking organic farmers around the world, has defined the following goals:

- to produce food of high nutritional quality in sufficient quantity;
- to work with natural systems rather than seeking to dominate them;
- to encourage and enhance biological cycles within the farming system, involving microorganisms, soil flora and fauna, plants and animals;
- to maintain and increase the long-term fertility of soils;
- to use as far as possible renewable resources in locally organised agricultural systems;
- to work as much as possible within a closed system with regard to organic matter and nutrient elements;
- to give all livestock conditions of life that allow them to perform all aspects of their innate behaviour;
- to avoid all forms of pollution that may result from agricultural techniques;
- to maintain the genetic diversity of the agricultural system and its surroundings, including the protection of plant and wildlife habitats;
- to allow agricultural producers an adequate return and satisfaction from their work including a safe working environment
- to consider the wider social and ecological impact of the farming system.

Organic Agriculture in Saskatchewan

Estimates of the number of organic producers in Saskatchewan range from 250 to 300, with a total number of acres at 200,000–250,000. Not included in these figures are 300 lake leases for wild rice production (Green, 1990). Current estimates of the economic value of Saskatchewan organic products are between $15 and $20 million.

"Organic" or lower-input farming has been around since the settlement of Saskatchewan. Early farmers relied on natural fertility, green manure, and mechanical and cultural weed control methods to produce supplies of cereal crops and livestock. This changed after World War II when wartime industrial technology was converted to peacetime technology for agriculture.

The philosophy and practice of modern organic agriculture originated with the writings and work of Sir Albert Howard in England and Rudolph Steiner in Austria. In Saskatchewan the organic movement was established during the 1970s as environmental and health concerns were raised about chemical intensive agriculture; and the energy crises of 1974 and 1979 shocked North Americans. Groups like Earthcare, a grassroots organisation dedicated to developing organic agriculture and the Canadian Prairie Organic Producers Marketing Co-op at Girvin provided farmers with information through conferences, networking, and publications. The publishing of *Earthcare: Ecological Agriculture In Saskatchewan* (Hanley, 1980) was a landmark book for those organic farmers seeking more information on organic production techniques. Interest in organic agriculture was driven by farmers concerns about chemical costs, health, safety, soil conservation, and preservation of wildlife habitat. Recently, the growth in organic agriculture has been influenced more by consumer and market demand for organic products. The current term *organic* means producing, processing, and preserving food and fibre without synthetic chemicals, fertilisers, growth regulators, and feed additives. Organic farmers use mechanical, cultural, and biological pest control as well as crop rotation, green manure, and crop diversity to manage farm resources.

"Certified Organic" means that production has followed a set of production standards from a certification organisation that specifies chemical-free periods, and accepted production and processing methods. It also includes an independent, third-party inspection process to ensure that these standards have been adhered to. In this process a lot number is attached to organic produce as it leaves the farm, allowing a product to be traced from the farmer's field to the consumer. Under proposed federal legislation all organic farmers, through their certifying organisations, will have to meet a minimum set of certification standards. Organisations may exceed national standards, but the intent of the legislation is to ensure that "Certified Organic" is used only by producers and processors who follow the minimum Canadian standards. Organic farmers produce for a consumer who wants a more environmentally friendly agriculture without pesticide residues in their food. The organic movement has down played the food safety issue and is beginning to focus attention on sustainable agriculture and the environmental benefits of an organic food system. There is some animosity between proponents of organic food and conventional food. This is due to the belief that promotion of organic food will leave consumers wary of non-organic food.

A large part of the movement also sees organic agriculture as a vehicle for changing the food distribution system. Many producers are striving to redefine their relationship to distribution and processing, and to consumers, in an attempt to diminish the corporate domination of the input, processing, and distribution sectors. While difficult to achieve, this idealistic vision of an organic food system is an important motivation for some organic producers and consumers.

Organic agriculture should be seen as a step towards sustainable agriculture, but it can be argued that as practised now in Saskatchewan it is not sustainable in most examples. Saskatchewan's organic agriculture is still export dependent and some organic farmers are not using enough crop rotation and soil-improving crops to maintain and build soil quality. Nutrient cycles are not being well maintained.

Cushon Farm Profile

In order to better understand what alternative methods of production can offer farmers I will describe in some detail what I have been doing on my own farm.

I began farming in 1981 and started farming organically in 1985 on 160 acres, where I stopped using inorganic fertilisers and chemicals. The last year I used fertilisers and chemicals on the rest of the farm was 1988. I was completely certified organic on all 1280 acres by 1991. My family has a history of relatively minimal use of off-farm inputs. We've used sweet clover in the rotation since the mid 1970s, as a soil-building green manure crop.

The farm is located in the thin black soil zone of southeastern Saskatchewan. We have an abundance of prairie potholes and aspen bluffs. The land produces several crops including spring wheat, durum, peas, and sunflowers. These crops make up the majority of what I produce most years, but I continue to experiment with other crops on a small scale. The limits to diversification are often labour, lack of specialised machinery, small-scale storage and marketing channels, insufficient information and extension support, and a lack of time. I have no livestock.

I have trouble defining a rotation I use consistently, because the crops that I produce have been changing and evolving. Several differences mark my organic farm operations from neighbouring conventional operations. I have eliminated inorganic fertilisers and the use of pesticides. Tillage for weed control is used sparingly and the use of fuel is reduced wherever possible by fuel-efficient tractors and equipment, and by minimising passes over the fields. Green manure crops are used as often as possible for fertility and soil conservation. As a result, I cash-crop fewer acres than my neighbours each year; but if I include the acreage of green manure crops on summerfallow, my acreage in crop would be higher than conventional farmers but less than conservation tillage farmers. For example, I have 1,070 cultivated acres: in 1994 I produced 195 acres of sunflowers, 143 acres of peas, 70 acres of durum, 235 acres of spring wheat and 245 acres of yellow blossom sweet clover for green manure plowdown. In effect 82% of my cultivated acreage was in crop. That is somewhat higher than the provincial average of 70% in 1991 (Rutherford et al., 1991), but comparable to the average for the black soil zone.

Wheat and Durum

Spring wheat and durum are heavy users of soil nutrients and strong competitors with weeds. Durum is a little slower to establish than spring wheat, so early weed infestations can have some negative impact. I try to plant durum and spring wheat on summerfallow that has had a green manure plow down, on pea stubble, or on cereal or sunflower stubble that has had a recent green manure plowdown. Sufficient nitrogen availability is critical to achieving high protein wheat or durum. Most organic markets prefer higher protein wheat. The basic requirement of any successful production method is to prepare a good seed bed, use high quality seed and seed as shallow as possible into moisture for rapid seedling emergence. I seed at much heavier rates than conventional farmers to increase early competition with weeds. I also select varieties that have very competitive characteristics, are disease resistant and generally produce higher protein.

Timing of seeding is critical. Soil temperature, moisture conditions, and weed problem histories are important determinants. Usually I seed later than conventional farmers for wild oat control and for rapid emergence because of higher soil temperatures. However, I believe that continual delayed seeding creates a selection process for wild oats that germinate at higher soil temperatures. As well, some other weeds germinate best at higher temperatures, thus late seeding to avoid wild oats may result in an infestation of green foxtail. Therefore, cultural control methods require rotation as well. Farmers can not predict all future conditions the crop may encounter but must rely on intuition, good fortune and a strategy of diversity to minimise risk.

The primary strategy in organic pest control is to maximise crop health and the ability to compete. All other methods of organic pest control are secondary and used only if needed. After seeding and before emergence of the seedlings it is possible to control some weeds that emerge before the crop. Harrowing or rodweeding can do this. The results are highly variable but often effective. After crop emergence, if weed germination is strong, most crops can be harrowed with tine harrows up to various stages. This is even more variable and requires a lot of experience and confidence. The most important factors are crop stage, soil condition, and weed seedling size. Conditions must be favourable with dry loose soil, small weed seedlings, and a good enough stand of crop to accept some damage. After harrowing the crop must compete on its own.

Cereal crops are usually very competitive and the rule of thumb is if the crop emerges before the weeds, then the weeds will have a minimal impact on yields. This is true for cereals but not for less competitive crops like peas and lentils. Weed surveys of conventional and organic fields in 1991 and 1992 have indicated that at least in wheat crops, the number of weeds in my fields is similar to the average for conventional farms (Frick, 1993).

Peas

Peas have their own unique problems. They have been a recent addition to my rotation but I have been very pleased with their results. Peas are legumes that fix their own nitrogen. This is very valuable especially for organic farmers who rely on on-farm sources of nitrogen. The inclusion of peas has allowed me to extend my rotation significantly. Cereal crops following peas are generally as good as summerfallow crops, and peas also will produce well on cereal stubble with adequate moisture. Peas allow, for example, a four-year rotation of fallow, wheat, peas, and durum. Peas are not strong competitors with weeds; however some varieties are much more competitive than others are. Peas are a short-season crop that allows for very late seeding. They prefer cooler, moister conditions, which sometimes are not available with late seeding in southern regions. Peas can be harrowed before and after emergence. Harrowing after emergence must be done with caution as peas are more sensitive than cereals and damage can easily occur. I seed peas at three bushels to the acre, which is expensive because pea seed may cost up to $12 per bushel. The advantage of an extended rotation far outweighs the additional costs. In three years I have had pea yields from 20 to 30 bushels per acre which is very competitive with conventional farms in the area.

Sunflowers

I grow confectionery varieties, which are sold as hulled raw seed. Sunflowers require a long growing season, but they are very hardy and can be aggressively tine harrowed after emergence. They are very competitive and outgrow most weeds easily. Because they are deep rooted, they are more drought and heat tolerant than cereals and peas. Sunflowers are more difficult to place in the rotation because of residue management requirements from previous crops, diseases, and problem with establishing following crops. I row-crop sunflowers, planting in 30" rows and cultivating twice during the growing season. Row cropping has several advantages: the most obvious is weed control. The row-crop cultivator under ideal conditions will control 90% of the weeds. Row cropping will also leave the soil between the rows exposed and subject to erosion, though this has not been a serious problem on my farm.

Yields and Economics

Yields on my farm are variable but relatively consistent with my neighbours for cereal crops. Peas often have more serious weed problems producing up to 30% less. After three years, my average pea yield would be in the range of 25 bushels per acre. The opportunity exists for better yields with more competitive varieties and better management.

The sunflowers consistently produce good yields under variable conditions, sometimes exceeding the provincial yield averages. They have yielded from 650 to 1500 pounds per acre.

Because of organic premiums and lower input costs, I net as much or more on average from each acre cropped than do conventional farmers. This is highly variable because of market fluctuations in demand and lack of access to markets.

I cannot cash-crop as many acres most years, as conventional farmers do, because I rely on natural sources of fertility and green manure crops. My rotations limit my cash-crop acreage, but eliminating input costs such as fertiliser and pesticides saves considerably on expenses. It is easy for a conventional farmer to spend $40 per acre on fertiliser and pesticides. In the case of cereals, if I can maintain average yields, then my net income is usually $40 per acre greater than conventional farmers without the premium organic prices. Premiums range from 25% to 100% of conventional prices. This can translate into much higher returns per acre.

Fertility

Fertility on organic farms requires considerable understanding of nutrient cycles and soil chemistry. I have only shallow knowledge in this area. The base of natural fertility is of course the organic matter and the parent material in the soil. The organic farmer must try to maintain or improve organic matter levels. This can be done by ensuring that all crop residues are returned to the land, that green manure crops are plowed down on a regular basis, and that soil erosion is eliminated. The most important fertility question on my organic farm is how do I maintain phosphorous levels? If we continue to export crops, then we must ensure that nutrients are replaced. This is much more difficult with phosphorous than with nitrogen. Organic farmers can be self sufficient in nitrogen by using legume green manure crops.

Saskatchewan soils are generally high in phosphorous but most of this is unavailable to plants. Organic rotations are possibly more successful at making phosphorous more available because of increased biological activity. This will not solve the problem of long-term availability of phosphorous because Saskatchewan soils have limited total supplies. Organic farmers can use animal manure and rock phosphate, which requires careful management. There is evidence that applications of synthetic phosphorous fertilisers inhibit the development of mycorrhizal fungi, which assist plant roots in the uptake of nutrients (Clapperton, 1996).

Organic farmers will eventually be required to add some form of phosphorous to maintain long-term yields. The current question is whether it is better to deplete on-farm supplies in the short term or to mine supplies from far away which are also limited and will run out eventually. The solution is to ensure that we recycle phosphorous and close the nutrient cycles. This is very difficult to do when consumers are so distant from the land where their food is produced.

Saskatchewan soils are rich in potassium and it will be several generations before we will need to fertilise with potash. Probably we can be relatively self-sufficient in potassium as we have generous supplies currently being mined in Saskatchewan for agriculture elsewhere.

Trace elements are also important to fertility. These elements are not being replaced at the same rate as they are extracted in either conventional or organic agriculture. Most Saskatchewan soils are not currently showing trace deficiencies. Organic farmers and conventional farmers will ultimately face the same problems that will need to be solved by closing nutrient cycles. We have a very artificial agricultural system that imports or mines nutrients from the soil and exports nutrients with no system established for recycling. The current system works now, but is unlikely to last well into the future.

Organic Agriculture: Moving Toward Sustainability

In Saskatchewan, alternative agriculture seems to be heading in two different directions. Economics—the need to increase net farm income—dictates the two approaches. One is to reduce off-farm inputs and the cost of production while trying to maintain acceptable levels of production. The organic farmers do this by focussing on eliminating pesticides and synthetic fertilisers, conserving soil, and developing a system more reliant on farm natural resources, and intensive management and knowledge of alternative practices. The other is to maximise production, which usually means increasing input costs. The movement towards zero-till focuses on replacing tillage with herbicides, and minimising labour, fuel, and machinery costs. This approach has higher fertiliser and pesticide costs, but fuel costs and labour requirements are lower. Investment costs in machinery may also be lower.

The two approaches have two goals in common. First is the conservation of soil. Second is to increase net income. Zero-till technology has had unquestionable benefits in reducing soil erosion and improving soil quality, but the potential for plant disease is higher as is the concern about increasing herbicide resistance problems. Zero-till is more energy dependent than organic production methods (Lovins et al., 1984: 78)

The knowledge and experience of organic farmers has proven that organic or low-input alternatives are viable alternatives. Research at the Saskatchewan Research Council has shown that many organic practices are increasing the net income of farmers (Rutherford, 1991). The studies of the Northwest Area Foundation (1994) and the National Academy of Sciences (1989) also indicate that farmers who have adopted these alternative agriculture approaches can be very successful as well. The research shows a high variability in success, but good managers, using alternative sustainable methods, can improve soil quality and achieve economic success comparable to or greater than conventional managers.

It can be argued that a wider adoption of some cost-saving organic practices by conventional farmers could benefit the provincial farm economy. Positive side effects would be reduced environmental contamination and exposure of farmers and their families to toxic pesticides as well as fewer herbicide resistance problems.

Organic farmers are making progress towards sustainable agriculture by experimenting with alternative agricultural methods largely unsupported by governments and the institutions that support conventional agriculture. Current government policies and support are biased toward zero-till with little support for other alternative production systems. Agribusiness is now funding research which in the past was publicly funded. This bias may be due to an unwillingness to challenge the status quo of science, technology, and commerce or a lack of knowledge about the transformation that is taking place towards sustainable lower-input methods on Saskatchewan farms, and around the world. With research, development and extension support, lower-input alternative methods would be adopted by a larger number of farmers. This will require a more flexible approach to research and extension because alternative methods are based upon local conditions and resources, and are more site specific. Equally important is the support of research-funding agencies, government departments, and universities in research and education.

The alternative agriculture movement has on a social level created a new community. Widely dispersed farmers come together from across the province to exchange ideas at conferences and meetings. This sharing of knowledge on a small scale has produced some tremendous results. Farmers who have been willing and able to develop organic farming systems are part of a movement that has succeeded in its goal of producing food for a discriminating consumer. The organic movement has created a sense of optimism, and a network of certification organisations, marketing organisations, and information exchange. Organic farmers have also been successful in creating a community and infrastructure to serve their needs.

The organic sector, to some degree, has been successful in adding value to primary products. A number of small-scale processing operations exist throughout the province. Some are involved in packaging in consumer-ready sizes. The ability to put processed organic products on store shelves in the export and domestic market may actually be easier than in the conventional food system because the smaller size of the organic/health food distribution system makes it more accessible. This factor may give the organic food sector an important advantage in promoting value-added processing on the prairies.

What Farmers Can Do to Adopt Alternative Methods

From my experience I suggest that farmers wanting to adopt alternative farming methods:

- Join a sustainable or organic agriculture organisation. Most farmers learn new approaches best from other farmers.
- Attend an organic field day or visit an organic farm to see how they do it.
- Experiment on a small scale before adopting new methods.
- Increase your on-farm and co-operative producer research into alternative methods for weed control, fertility and livestock production methods.
- Seek out research on alternatives and talk to the researchers. Conventional research is an important source of knowledge that can be adapted to individual organic farms.

- Accept that weed and insect pests are part of agriculture. Management is more important than eradication. Re-examine your perspective on why you use a particular treatment or operation. Herbicides in particular are often used for cosmetic reasons. Advertising for herbicides often exaggerates. As a consequence, farmers use herbicides when there is not an economic reason to do so.
- Increase the use of legumes as cash and green manure crops to reduce the dependency on off-farm nitrogen supplies. Markets for green manure legume seed may provide a significant opportunity.
- Reduce herbicide use in cereals and other strongly competitive crops. Cereal crops are generally very competitive and require minimal assistance to compete with most weeds. Very little research has focused on alternative strategies for weed control in cereals; but practical farm experience shows weeds can be managed effectively in low-input systems.
- Increase the diversity of crops produced to provide risk management and the agronomic advantages of crop rotation.

Conclusion

In this paper I have provided a general background to sustainable/organic agriculture in the province. I have identified some problems with conventional agriculture and why I think the movement towards sustainable agriculture is an important development.

The fundamental question that still needs to be answered is how much technology, energy, and off-farm inputs can be sustained over the long term? Economics and corporate interests have been the major determining factor in adopting a capital-intensive, technological approach. Creating a market for agricultural inputs is often the driving force behind agricultural research. The long-term costs associated with resource depletion and environmental degradation have been downplayed. But these issues will not disappear.

The blame for the problems in and from agriculture does not rest only with farmers, although we have been complacent in our acceptance and adoption of current technological approaches to agriculture. We have assumed that what the vast majority of experts have told us is the truth, and that the only way to successful and profitable farming is to adopt the "industrial approach". Farmers have been victims of the millions of dollars spent on research, advertising, and promotion to convince them there is no other way to farm. Chemical intensive agriculture has grown in tandem with increasing technology throughout society. In the absence of information and support for alternative approaches to agriculture, it is not surprising that more farmers have not adopted reduced-input methods.

Lower off-farm input methods such as organic agriculture have proven in the short term that they can maintain relatively high levels of production without large amounts of off-farm fertilisers and pesticides. However, long-term prairie organic soil fertility will likely require off-farm inputs even if we incorporate more livestock into our system, because we are continually exporting nutrients. This breaking of the nutrient soil/food cycle is a problem that will have to be solved if we are to truly have sustainable agriculture. The short-term goal then has to be to reduce input use in order to conserve resources for future generations and minimise negative environmental impacts. We can reduce our dependence on synthetic fertilisers by using more green manure legumes in rotation. We can dramatically reduce pesticide use and have a minimal impact upon production levels. Pesticides have been oversold as a quick fix to pest problems.

The following points are the most important reasons why farmers should consider alternative approaches to agriculture:

- Alternative approaches to agriculture can in the short term reduce our dependence on expensive inputs and increase net farm incomes by reducing input costs.
- Alternative production systems can provide independence and increase farmers' control and flexibility.
- Management systems that focus on cultural pest control and on-farm sources of fertility can be as productive as systems that use intensive technology.
- Alternative agriculture tends to be more energy efficient, more diverse and more resilient to economic and weather-related problems.
- Reducing pesticide and inorganic fertiliser use will reduce soil and water pollution, and other environmental contamination.
- Low-input systems minimise pesticide exposure for farm families and decreases acute and chronic health risks.
- Herbicide resistance is a growing problem that can only be solved by rotating in cultural and mechanical pest control methods.
- An expanding and maturing market for organic products is bringing strong economic benefits to organic farmers.
- Value-added opportunities exist for the organic sector that may be easier to develop.
- Alternative agriculture is more likely to develop and support sustainable communities.

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Game Farming and Biodiversity

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The confinement or semi-confinement of animals and birds, other than the "domesticated" species, is not new by any means. Historians have provided ample evidence of deer species, wild boar, and, of course, birds and others being maintained for food and for recreation. But it is the local development of profit-motivated industries based on confining and then harvesting species as widely different as the alligator and the bison that is the concern of this paper. My detailed knowledge is insufficient to discuss all the species that are being considered for use in Canada, ranging from the ostrich to the llama. So the indigenous wild ruminants, such as the deer, elk and bison, will have to serve as examples for the others.

It must be recognised that the farming of so-called game animals is a farming business like any other. There are, however, contentious associated issues such as concern about free roaming and confined animal interaction, cross-species disease, and the importation of disease from wild populations to domestic herds.[1] In the raising of the exotic species there is a full quotient of myths and half-truths, so the game-farming innovator is hard put to find a balance between the truths and falsehoods that the public is all too ready to accept about the industry.

Domestication

Webster's dictionary describes a domestic animal as "Any of various animals, reclaimed from the wild state and adapted to live with man, such as the horse, cow or dog." Presumably then, all those species that do not fit this definition are "wild." It becomes a moot point measured in generations, as to when a species that has become confined, such as elk, converts from the "wild" to the "tamed" and then to the "domesticated" category.

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[1] This has become a particularly trenchant issue with the recent outbreak of Chronic Wasting Disease in wild elk herds in Saskatchewan.

This question becomes important when regulations must be prepared based on these differences.

The species that are included in the group commonly termed domesticated are presumably those that on their own found it more advantageous to live close to humans. The benefits of food and protection increase their chances for survival. This is not entirely the popular description of how animals were domesticated, most certainly not by those that would cast humans as the sinners in the history of the process of domestication. But it is unlikely that early humans had the means of confining the animals that would not otherwise permit themselves to have their freedoms restricted with some ease. One can conjecture that in many instances it would have been a choice through selection by an animal species to either enter into a symbiotic relationship with humans or suffer extinction as its habitat altered due to climatic change, or because of predation by a stronger species, or alternatively if competition for the food supply intensified with other stronger species.

The process of a species changing as a result of being under some form of confinement is likely inevitable. At the University of Saskatchewan, for example, we have held groups of bison and muskoxen. Even in these small populations certain animals captured when very young have adapted, while others did not and were removed. Already the process of selecting those with the temperament to accept management by humans had begun. Indeed by comparison, it is common practice to eliminate individual animals in a domesticated beef herd that are too undisciplined, even under the semi-confined management of a ranch, so that the rancher can maintain herd docility.

The particular traits that change most readily under confinement management are likely those for which there is the largest selection advantage, while those that are not challenged significantly by the new circumstances do not. The ones that will not change at all are most likely those that are "hard wired" as the behaviourists refer to them. An example of easily influenced traits would be the much larger antlers that a bull elk can afford to support which higher levels of nutrition under confinement permit. Examples of "hard wired" traits would be those that are basic to survival such as bolting at the sight of a dog or sexual display.

That a formerly wild species that is now farmed will change in some respects over time may not matter unless the changed animals have to revert at some point to survival under the harsher wild conditions. But there is a general theory that covers the domestication process. The term "neoteny" indicates the time that maturity occurs. The animal that sets neoteny back in time therefore, and remains juvenile for a longer period of its life, will also be the one that is more manageable. Most rural people have had some exposure in "taming" a wild animal, and that can only be accomplished when the individual that is captured is very young. The connection with current game farming can be appreciated because the longer an animal remains juvenile the less aggressive and tractable it will be under conditions of confinement. It may be pushing the theory a little far to suggest that it means that the juvenile appearance of the younger animal will be retained, for example, males will appear less masculine. The underlying reason for this delay in neoteny is likely that a changed hormone balance has emerged because of domestic selection for docility. The significance of these comments is to suggest that in all likelihood some obvious changes will occur in the temperament and possibly the appearance of farmed game animals over time. Some changes will even occur in a time frame that is related to the experiences of current game animal breeders.

Species Differences

The differences between wild species, the bison, elk and deer, and domestic cattle, horse and sheep, has become a significant argument in favour of increasing domestic production and commercial meat consumption of the former group. Comments, including the words "flavour," "leanness" and "cholesterol level" are being used to promote the exotic meats, with very little justification for these improved nutritional claims. Differences in the flavour of the flesh there are, but there are also differences in the animals' appearance and temperament, as previously mentioned. The differences and similarities that are most important to the animals, however, are among the details of anatomy and physiology, which alter the way that each can cope with the environment in which they evolved or are now going to be raised.

The bison, like its close relative the cow, did not depend on fleetness or agility to survive. Rather, both used herding as a means of protection. The outcome was the possibility of supporting a very large rumen and therefore having the ability to graze and ferment large quantities of relatively low-quality forage. Consequently, they could adapt to a very wide range of habitats. The deer-like animals on the other hand, having evolved to be more dependent on escaping at high speed, could not afford the luxury of the larger rumen and therefore had to be more selective in their feeding habits and in the areas that they could inhabit.

A related observation can be made concerning the shape of the mouthparts, and the use of the tongue and teeth. The volume feeders like the cow have broad mouths and long tongues to draw the coarse standing-grasses and forbes across their dental pad. In comparison, browsers like the deer tend to have pointed mouths and mobile split lips to allow them to sort their feed.

The point of this particular discussion is to suggest that under domestic conditions where feed is likely to be adequate, many species differences between domesticated and game-farmed animals become less significant. But under their natural conditions the species must stay with their specific habitats that complement their capabilities. If the environment is not challenging the animal then it is a moot point whether their "wildness" capacities are being utilised.

The ability to cope with extremes in the physical environment, particularly cold, is certainly of interest in comparing species in Canada. The hairs per unit area of skin of the indigenous ruminants may be as much as ten times greater than some domestic cattle, for instance. And the increased protection may be even more dramatic because of the quality of the hair coat itself. Livestock scientists are beginning to see patterns in the ways that northern ruminant species adapt to cold weather. One of the obvious strategies is to move about as little as possible so energy expenditure is reduced. Another is to drink as little water as possible, which has a triple benefit: it reduces the heat needed to melt snow; increases the blood level of nitrogen by-products, such as urea, which spill back into the rumen giving a protein-sparing effect; and reduces the amount of heat loss involved in urinating.

If these cold-adapted wild species are enticed to eat larger amounts in winter, then obviously some of their protective mechanisms will not be called into play. It is a balance between feeding them for optimum—or even maximum—productivity or failing to capitalize on some of their special innate abilities to cope with winter conditions. It is interesting that most game-farming operations seem to be leaning toward the maximum productivity aspects rather than utilizing the animal's wild capabilities in order to cover the high overhead of fencing and initial animal price. Despite all the promotion of the adaptability features of the indigenous species, the lure of maximizing returns rather than lowering input costs prevail just as it has with the development of the species domesticated much earlier. There is a saying, "if it walks like a duck, and quacks like a duck, it is probably a duck"; in this case, is a game animal actually a farmed animal?

Game Farming for Biodiversity

There have been very few proper feasibility studies of game-farming endeavours and the future is not always as rosy as some promoters would imply. There has been much more effort put into locating risk capital and selling breeding stock to obtain quick and high profits than on how a sustainable industry can be established to more fully utilise the native resources. Perhaps that is good enough for the initial entrants, but anyone planning for the long-pull had better have a cash flow analysis conducted, because the profit margins are likely to be very modest as compared to the stories that appear in the popular press. The initial cost of breeding stock is still very high and the start-up costs are substantial.

The final point is the one that can be stated with absolute certainty; in the face of a sufficient market, the profitability of any livestock enterprise is based on the level of management. If one cannot manage a domesticated animal operation then do not assume that because the game animals are native and somewhat hardier, management is less important. Nothing could be a bigger mistake. Confined game animals have higher requirements for knowledge of their needs and behaviour simply because they have not yet made the complete adaptation to co-surviving with humans. And operating game farms so as to ensure biodiversity will require a new system of management, not only skilled at animal improvement but also deeply aware of the species-wide and ecological effects of domestication.

SECTION 6
MACHINERY

Co-operative Intervention in the Farm Machinery Market: The Case of Canadian Co-operative Implements Limited

Doug Faller

The Co-operative Context

The desire to ameliorate the worst effects of exploitative market systems such as in grain marketing, transportation, farm machinery manufacturing and distribution, or trade in retail goods gave rise to the many-faceted populist movement in Western Canada. Co-operative enterprise was a prominent populist choice as a means of providing acceptable levels of needed services and of retaining some of the surplus capital generated locally.

Experimentation with co-operative structures had been growing in frequency and scale since the turn of the century. Some failed, but the successes were remarkable. Indeed, the co-operative elevator companies, and the use of grain pooling as a marketing tool, emerged from the struggle of early prairie development as powerful examples of people's ability to offset the negative effects of capitalist markets through collective action. Pleading to government was not the only avenue for protest. Co-operative action was direct, self-interested intervention in the marketplace.

Many within the early co-operative movement envisioned co-operatives as a model for building a better social and economic order. Some, like A.E. Partridge, saw them as a temporary mechanism toward state ownership of public utilities and natural resources, part of the transformation from a capitalist to a socialist society in which the state acted on behalf of common people.

Such socialist orientation was not uncommon in the early development of prairie populism. The experience of the Depression further discredited the capitalist system and impelled many to believe in a socialist alternative, in government ownership, and in direct market intervention. With such idealism at its height, and bolstered by the success of the Pools and the recently formed Co-op Refinery, the co-operative movement was truly feeling its oats. It is within this context of growing self-confidence that, in 1940, Canadian Co-operative Implements Ltd. (CCIL), the most significant example of populist response to the machinery industry through market intervention, became part of what Ian MacPherson (1979) called the third era of co-operative expansion in the period 1939-1955.

Yet the mainstream of the co-operative movement, despite its idealistic self-image as the agent of social transformation, was not anti-capitalist in the same way that the more radical socialist elements of the populist movement in Saskatchewan were. George Melnyk describes the tradition as liberal democratic, having three basic characteristics—respect for private property, tolerance of capitalism, and unifunctionalism—and offering "a powerful emphasis on self-interested pragmatism" (1985: 21). Melnyk describes the developmental "phases" of the co-operative movement in these terms:

> Farm co-ops were an integral part of what has come to be known as the "agrarian revolt",... The twenty-year period from 1900 to 1920 can be considered the "utopian" phase of Prairie co-operation. ... The pool idea ... galvanised prairie farmers ... [and] represented the "movement" phase of co-operation... It was the Depression of the thirties that consolidated the co-operative movement's special relationship with the region (Melnyk, 1985: 22–23).

In the post–World War II period, co-ops had entered what Melnyk calls their "systems" phase and the utopian spirit of the movement withered.

While the founders of CCIL that came from the Co-operative sector may not have been motivated by the more radical ideas of socialism or state intervention, they were imbued with the vision of the role of a co-operative as "pragmatic" intervention into an exploitative capitalist industry on behalf of their members. They did not perceive this intervention to be a life-and-death struggle against powerful forces of capital. Rather, it was something that could be implemented and managed with a little effort and good will. When ultimately confronted with the reality of operating within a highly concentrated and integrated capitalist industry, however, less utopian rationales would guide the management of CCIL, bringing about conflict with that part of its populist roots which conceived of CCIL's purpose in more ideological terms.[1]

The UGG Experience

Before proceeding with the history and analysis of CCIL, it would be instructive to look at the first experience that farmers had with marketing farm machinery, that is, through their co-operative, the United Grain Growers (UGG).

In 1912 UGG established a Co-operative Supplies Department,[2] which handled lumber, flour, apples, coal, fencing wire, builders' supplies, and binder twine. Farm machinery was added about 1914. Phillips (1956: 60) links the UGG venture into machinery marketing to the defeat of reciprocity, being an attempt to overcome the increased cost of imported implements associated with retention of the tariff.

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1. In an interview June 26, 1991, Frank Deitz, owner of Autotran Manufacturing, Loreburn, SK, and former CCIL director, emphasised the ideological roots of CCIL within the farm community.
2. W.A. Mackintosh, Agricultural Co-operation in Western Canada (Toronto: The Ryerson Press, 1924). Chapter 4 provides a brief description of UGG's venture, which informs the present discussion.

Because it was originally set up to operate as a purchasing agent for farmers on a commission basis, it did not accommodate the need at the local level for repair parts and service. Furthermore, UGG's venture was unable to command a consistent supply from manufacturers. In response to these problems, it evolved to become a distribution network utilising 57 agencies that it established to assemble machinery and carry stocks of machinery and repairs, a system characterized by large inventories.

The policy shift away from being a purchasing agent because of the inconsistency of supply from established interests within the industry proved to be the undoing of the UGG venture.[3] Inadequate planning preceded the thrust into inventory management and local marketing. Insufficient reserves were provided for market downturns. Despite successful years the heavy losses from 1919 to 1922, due largely to the burden of inventory when sales fell, forced the discontinuance of machinery sales.

Mackintosh's general theoretical discussion of the exigencies of co-operative marketing of the kind done by UGG is pertinent to the failure of the UGG effort:

> To reduce the number of "middlemen" stages, service must usually be curtailed as well, and further, the *hostility of both wholesalers and retailers* incurred. Substantial saving is possible by distribution through elevators, though the system may *fail to develop the local enterprise* that the cooperative association may call forth. It is important to note that this type of organization is essentially based upon a theory of producers' cooperation… It is *agricultural cooperation rather than consumers' cooperation* (1924: 131; emphasis added).

His arguments are instructive for our later analysis of the reasons for CCIL's demise. While outright hostility toward CCIL from wholesalers may overstate the case, CCIL was also plagued by inconsistency of supply. The inability to establish a credible presence at the local level also reappears for CCIL. A thorough grasp of the difference between agricultural and consumer co-operation seems to have escaped CCIL's founders and managers, clouding their vision of its place within the industry. Their vacillation on the critical operational issues of sales policy and whether to begin manufacturing are related to the lack of understanding of the competitive nature of the industry and the structural limitations to entering the industry merely at the distribution level.

Origins of CCIL

The Saskatchewan Farm Machinery Commission of 1915, admitting that they were "unable to find a remedy" to the power of the farm machinery companies, had recommended co-operative intervention to address the frustration of the farm community with machinery that was ill-designed, lacked durability, and was over-priced. The problems they had documented continued through the 1930s when declining farm incomes clearly delineated the farmers' arguments, especially about high prices. This context of the devastation of the Depression brought the focus to bear upon machinery prices and seems to have galvanized the will of farmers, co-operatives, and actors within government to take action.

The investigation and report of the Canadian Special Committee on Farm Implement Prices, 1937, which succeeded the Commons Standing Committee on Agriculture, was an interesting juncture in the history of state involvement vis-à-vis farm machinery. Their report was largely inconclusive, but it did find that costs to the farmer were directly related to tariff levels, that substantial profits had been made in the industry, and that these profit levels were responsible for prices that they termed "too high" over the previous 45-year period. It was in relation to high implement prices that the report recommended co-operative action to reduce farm costs.

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[3] W.G. Phillips, *The Agricultural Implement Industry in Canada* (Toronto: University of Toronto Press, 1956, 60), claims the problem was "that of finding manufacturers willing to supply implements to them" (emphasis added). The only companies *willing* to provide assured supply were American ones that lacked Canadian distributors.

A Committee of the Saskatchewan Legislature assumed the impetus of the unfulfilled Commons report in 1939. In focusing on high prices, high distribution costs in particular, the Saskatchewan Committee also recommended co-operative action among farmers: "the true and permanent solution of the problem of farm implement prices is to be found in co-operative effort" (Phalen, 1977. *See also* Simkin, 1970; Scharf, 1959; MacPherson, 1979; Trevena, 1976). This set the stage for the enactment of a 50-year drama known as Canadian Co-operative Implements Ltd. The preoccupation of the Saskatchewan government report, and of prairie farmers, with perceived high distribution costs has critically important implications for CCIL's *raison d'être*, for the policies that governed its commercial activities, for its inability to capture a large market share and ultimately for its demise.

The state had already played an important role in the origins of CCIL through the Commons and Legislative committees. Now, a representative of the Saskatchewan government, B.N. Arnason, registrar of co-operative associations, became instrumental in helping to organise an early meeting of Co-operative representatives in Saskatoon in April 1940. This meeting established a committee of technical people, including Professor E. Hardy of the Department of Engineering, University of Saskatchewan, to find sources of machinery for the anticipated Co-operative. A second committee was formed (H.L. Fowler, Saskatchewan; Ed Peterson, Alberta; and Colin Burnell, Manitoba) to develop an organisational plan with Arnason as secretary. Once incorporated, Arnason served as CCIL secretary until 1942.

Of course the formation of CCIL was due to populist action, but largely indirectly through representatives from the co-operative movement. Harry Fowler, who came from the management of Co-op Refinery, and other prominent Co-op managers had made representations to the Saskatchewan Legislative Committee in favour of forming a machinery co-operative. They, and their colleagues, subsequently played the leading role in raising capital from farmers and in organising the company.

The original organisational meeting was marked by division of opinion on the prospects for success for CCIL. Memories of the UGG failure haunted some of those who attended. The Alberta government's unhappy experience in distributing implement repairs was expressed to the meeting through the pessimistic views of George Bennett, vice-president of Alberta Wheat Pool. A representative of the Alberta government's Farm Implement Repair Department apparently calmed these latter concerns. Despite the differences, a decision was reached at the meeting to proceed tentatively toward establishing a machinery co-operative by holding further discussions. A "mass meeting" was called for Regina in July 1940.

In his remembrances, Harry Fowler, the key figure in CCIL's creation, noted that the recommendation to proceed was made hesitantly and reluctantly because opposing views were heard at the Regina meeting. Disdainful of such trepidation, Fowler characterized such dissenting voices as "crepe hangers." The meeting was swayed by R.J.M. Parker, Saskatchewan's minister of municipal affairs, who argued for taking up the challenge and seeking the support of farmers. As Phalen recounts, the motion carried at the meeting to organise CCIL was "moved by James McCaig, president of the Saskatchewan Co-operative Wholesale Society, and seconded by W. F. Popple, manager of the Manitoba Co-operative Wholesale Society" (1977: 150). It seems the strong voices of Co-op representatives like Fowler, and their close association with the provincial government, were instrumental in overcoming doubters and getting CCIL off the ground. Curiously, farmers themselves are not to be found in the literature that describes the formative meetings leading to CCIL's creation.

CCIL was originally incorporated under Letters Patent of the Dominion Companies Act as a private company in 1940 with a limit of 50 shareholders:

> Shares were to be held by district implement associations comprised of farmers whose share investment quota was based on cultivated acreage. Fifteen per cent of the paid-up capital in each district association was to be used for organization expenses, with the remainder being invested by each association in CCIL which would be controlled by delegates from district associations (Phalen, 1977: 150).

This incorporation procedure was found to be lacking, although Phalen does not identify why. However, the inappropriateness of the original structure is clear enough—it is bureaucratic in nature and strays from co-operative principles of ownership. Not only were farmers not intended to be direct owners, their ownership share was to be based on their size.

CCIL was (re-)incorporated under a special Act of Saskatchewan in 1948. The new structure provided for direct farmer membership in CCIL, rather than through district associations. Shareholders would elect district delegates who would elect directors to control CCIL.

The organisation campaign was funded by the three provinces—$2,500 each from Alberta and Manitoba, and $3,000 from Saskatchewan—and undertaken mainly by co-operative managers and field staff through separate committees within each province. John B. (Jock) Brown, a Manitoba Wheat Pool delegate, who succeeded Fowler as president and general manager of CCIL in 1944, soon replaced the first head of the Manitoba committee.

G.B. Munro headed up the membership drive. Raising capital from farmers was a slow process. Begun in 1941, the campaign achieved its minimum target of $750,000 in 1945. About three-quarters of that came from farmers, the remainder in loans and grants from provincial governments and the Wheat Pools (Simkin, 1970: 12).

CCIL's Experience in Manufacturing and Distribution

With this meagre capital base CCIL began manufacturing in 1944 by purchasing a small factory in Elmwood, Manitoba, a suburb of Winnipeg. Initial production was of sleighs, wagons, and the harrower—also known to farmers as "the crazy harrow." The harrower, invented by Elmer Carlson of Wetaskiwin (Hislop, 1988: 14), was unique to the industry. It was particularly effective in heavy trash because of its oscillating action which provided self-cleaning as opposed to the typical "drag"-type diamond harrow.

The discer was the next implement manufactured by CCIL. Pioneered in design by a number of Saskatchewan farmers, it was based on principles of the one-way disk plow and those of the disc harrow. The one-way, an American import, had proven difficult to adjust for proper operation and, since it buried too much of the straw that would otherwise form a moisture-retaining mulch, it was considered inappropriate after the experience of the dust storms in the 1930s. With the help of Hal Lewis, R.A. Johnson of Beadle produced a model in 1942, including a seeding attachment that worked well.

Hal Lewis worked in the Agricultural Engineering Department of the University of Saskatchewan. A lifelong farmer, Lewis understood the practical application of engineering design—the need to function well in the field. Having been instrumental in the Johnson design, and having observed many similar efforts in the field throughout Saskatchewan, Lewis was asked by CCIL to build a prototype discer for them. He designed one that incorporated many good features he had observed, then tested the machine on his own farm, and participated in further modifications at the factory. The CCIL "disker," August of 1946, was the first one produced on a large commercial scale. By June 1947, Cockshutt had one on the market, followed by John Deere and International Harvester in 1948. Not having patented the disker design,[4] CCIL soon found much of the disker market taken up by the major machinery companies (Simkin, 1970: 16).

Lewis described the disker as "a machine well suited to the requirements of our dry land agriculture" and, in his modest way, spoke of the contributions and needs of others: "To me, the most important factor in the whole development, other than showing what can be done in Saskatchewan, is that the welfare of our western farmers has been vastly improved by the introduction of a new type of implement which allows them to do a good quality of work at a much lower cost of operation" (Lewis, 1970). Of course, "showing what could be done in Saskatchewan" is an important result of his and farmers' efforts and points out *the value of CCIL as a vehicle for the development of innovations in farm machinery.*

In 1963 CCIL began manufacturing the 500-series of swathers. The model 501 self-propelled swather won a design award, the Premier's Medal in Manitoba. In 1968 it began producing a thirty-foot self-propelled, double-hinged swather that transported easily with its wings raised. This was another innovation in the farm machinery industry. Several people knowledgeable with this swather agreed that, had CCIL added improvements to it, including hydraulic orbit motor drives, it could have become the industry standard and displaced other larger self-propelled swathers for many years.[5] About 1969 manufacture began of a 24-foot hinged pull-type swather which was also new to the industry. The 600-series of swathers came along in the late 1980s; the 700-series followed about 1986.

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[4] During the Royal Commission Hearings (pp. 3739–40), Dr. Barber asked Jock Brown: "Looking back do you think that you might have been wise to try and patent it (the disker)?" His answer was "No." To the next question, "Would it have been an advantage if you had patented and licensed it to other companies?" he gave a longer answer: "it might have been advisable for us to have done so, but at the time the opinion was that in the first place for a little concern like us to attempt to win a patent suit against the giants of the industry with so much deeper pocketbooks than ours would have been foolish. In the second place, our main concern was...to secure the interest... of the farmer." Obtaining a patent was a much different, and much less expensive, proposition from fighting a patent suit. Brown and his advisers must have assumed that a patent suit would surely erupt if they patented the "disker." How the decision not to patent serves the interests of farmers, at least CCIL members, is not clear.

[5] Frank Deitz made this point (June 26, 1991), saying that his "winged warrior" cost about $4,000—including improvements to make it a $6,000 swather would have established it in the industry. Roy Atkinson (June 26, 1991) agreed, adding the remark about hydraulic components. Ed Weinbender (July 26, 1991), parts manager and CCIL employee since 1962, felt the same way about the swather and its potential. Much of the history presented here about machinery manufacture and models was based on information provided by Ed Weinbender.

From 1962 to 1965 CCIL distributed a self-propelled combine, the "Yellow Fellow," manufactured by Claysen in Holland. This combine had a Deutz engine of German manufacture, the first diesel and first air-cooled engine in a North American combine. Claysen was purchased by Sperry-Rand Corporation, which began producing the New Holland combine with this technology. Having lost Claysen as a supplier, CCIL next turned to the Claas combine, imported by CCIL from Germany until 1969 when Ford Motor Corporation took over the distribution of these combines in North America. After 1969 CCIL imported Volvo self-propelled combines from Sweden and Volvo thresher assemblies that were used as the critical components for a pull-type combine that CCIL began assembling at their own Winnipeg plant in 1974. Eventually, in the 1970s, CCIL began production of their own engineered pull-type combine, first the 960, then the 9600 model.

CCIL was the exclusive distributor of Deutz tractors in North America from 1962 until 1982, acting as both wholesaler and retailer. In 1982 Deutz established itself in Atlanta to serve the United States market directly and then moved into Canada, including an office in Regina. Deutz kept most of the Co-op Implements depots as retail outlets but set up their own dealers as well, which undoubtedly undermined the position of CCIL and its depots. CCIL also distributed Volvo tractors for a few years from the late 1960s to the early 1970s.

CCIL's Changing Policy: Manufacturing

The original plan was not to manufacture machinery but to form a network of sales agents to supply machinery to farmers. The villain in the industry was perceived to be the high merchandising costs included in the retail prices of machinery. The perception was likely real enough. But this fixation with merchandising costs overlooked the realities of the industry structure.

By 1942, only two years after its incorporation, the CCIL Board had decided to get involved in machinery manufacture with National Farm Machinery Company in the United States, a company supported by twelve large regional co-operative wholesalers. National was about to begin production of what has been referred to by Harry Fowler as "Co-op Tractor No. 2." One could speculate here on whether CCIL's policy direction was influenced by the interaction within co-operative circles between the American co-operative wholesalers associated with National and the Canadian co-operative figures like Fowler, McCaig and Popple who had been so instrumental in its creation.

The *first* "Co-op" tractor had been adapted from basic truck designs by an engineer hired by the American Farmers' Union in 1935, ultimately being manufactured under contract by Duplex Machinery Company of Battle Creek, Michigan. This tractor was unique in several ways. With considerable assistance from the Ethyl Gas Corporation, which had tried for years to establish a market for its product in the farm machinery industry, it became the first tractor to use a high-compression engine and premium fuel.[6] Having a truck transmission, it was the first tractor that could be shifted while in motion, and was capable of speeds up to 50 miles per hour.[7]

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[6] Harry Fowler recites: "When other tractor companies adopted a similar pattern the Ethyl Gas Corporation had no further use for the co-ops but gave all their support to the major companies. This is understandable" (Phalen, 1977: 145, emphasis added).

National was thwarted in its plans to build 6,000 of the No. 2 tractors in its first year by the wartime rationing of raw materials. National produced not a single implement during World War II. The CCIL Board began to get cold feet about the decision to begin manufacturing with National. Hislop records that the "manager of the Saskatchewan Co-operative Wholesale Society wrote that if the arrangement with National continued, CCIL would "become a fifth wheel with no place in the local co-operative distribution of farm machinery" (Hislop, 1988: 14). CCIL feared that, while it waited for the deal with National to bear fruit, it would loose its original momentum to become an alternative, co-operative supplier to western Canadian farmers.

The Board reverted to the original policy of not manufacturing and sought out Cockshutt as a supplier. In fact, three proposals were made: that Cockshutt build a specific line of machines for CCIL, that CCIL take over the western division of Cockshutt, or that CCIL buy out Cockshutt entirely (Simkin, 1970: 13). When Cockshutt rejected all three proposals, CCIL changed policy again, purchased its Winnipeg factory in 1944, and began manufacturing. Cockshutt's rejection was clear evidence of how tenuous CCIL's attempts were at joint venturing with capital interests within the industry. Having moved away from its original plan not to manufacture when Cockshutt proved to be an unwilling supplier, CCIL was poised to become a significant manufacturer of farm machinery had it seized the opportunity to expand. But CCIL reversed its direction once again and decided not to expand production in the absence of a supplier of major equipment. The reason—CCIL ultimately struck a deal with Cockshutt.

Cockshutt's turnaround was abrupt. A key factor appears to have been CCIL's past relationship with National. In its search for a distribution system in the United States to establish the market presence to justify entry into manufacturing its own tractors, Cockshutt had decided to distribute through National. A joint tractor manufacturing venture between CCIL and National would have stood in the way of Cockshutt's attempts to secure an American market base. So Cockshutt became a less reluctant object of CCIL's wooing.

Ironically, by the time CCIL and Cockshutt had arrived at an arrangement, National had agreed to build tractors for an American company. This move would have precluded Cockshutt's involvement with National and jeopardised its new role as a supplier to CCIL. The Cockshutt deal was consummated, "but not before panicked CCIL representatives scuttled (the) National agreement to supply tractors to an American firm" (Hislop, 1988: 14). Simkin (1970: 14) recognised the importance to Cockshutt of CCIL's ties with National. However, he argued that CCIL's small production capability and limited line of equipment posed no threat to Cockshutt. I would argue that it was not existing capacity that mattered. CCIL's potential as a rival was great, especially because Cockshutt had not yet tooled up to produce its own tractors.

Vacillating as they did on whether to become competitor or consort, CCIL was apparently prepared to accept any company's terms. Their naive hope for successful integration into the industry, in the words of Harry Fowler "that some how, some time, *some farm implement company would recognise the potential of* CCIL and supply it with at least a limited line of machinery" (Phalen, 1977: 143), underscores the fragility of the plans surrounding their entry into the industry, plans which now relied heavily on the Cockshutt deal. It is very likely that Cockshutt did recognise the (competitive) potential of CCIL.[8] CCIL's entry into manufacturing, especially with their successful disker production, likely posed a greater threat than anyone assumed, prompting Cockshutt to prevent further competition in manufacturing by becoming CCIL's supplier.

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[7] Fowler recounts how Sask. Wheat Pool director R.A. Robinson purchased the first Co-op tractor, picked it up in St. Paul, and drove it home—in two days! And he was arrested on the streets of Regina for speeding when he got home! (Phalen, 1977: 145).

In addition to its great ambitions for tractor production, National had purchased the Ohio Cultivator Company, which had made tillage equipment and corn planters. Harry Fowler, then president of CCIL, took up the opportunity in 1944 to take over management of National in the United States. Fowler recounts (Phalen, 1977: 147) that the senior staff at the National plant in Shelbyville, Indiana, walked out in opposition to the management change, although Fowler absolved himself of any blame. Fowler hired a new factory manager. In reference to National's demise by 1952, he said "I hired the best man I could—but I hired the wrong man!" (Phalen, 1977). He blamed the U.S. wartime restrictions on salaries for his hiring decision. In naming the culprit, and in a self-serving manner, Fowler observed that "if I had been able to obtain a man who knew as much about operating a farm implement factory as Burt Males did about operating a refinery, the story of National might have been different" (Phalen, 1977: 148).

When conflated with frequent dithering over major policy directions, this management crisis at National speaks to an approach to management in CCIL, which was inadequate to decisively meet the challenges of entering the farm machinery industry. Fowler's experience at the Co-op Refinery was in the area of "consumer co-operation" (as termed by Mackintosh), a situation where the local (co-operative) enterprises that provided market penetration for the refinery's products already existed (or were created) in the form of the local consumer co-ops. But, as we will see, CCIL's leaders continued to call for "agricultural co-operation" to solve its problems of market entry, instead of decisively entering manufacturing on its own or establishing a commercialised distribution network that could compete effectively at the local level. The structure of the industry called for a response that CCIL was unwilling to give.

CCIL's relationship with Cockshutt was strained from the beginning and Cockshutt's commitment to a long-term partnership was dubious. Just as UGG's problems were directly related to lack of control over their supply, CCIL was in the same position of uncertain supply with Cockshutt (and subsequently all of their European suppliers). When questioned at the Barber Commission Hearings, Jock Brown related that Cockshutt's discounts to CCIL were 24.6%, 31.5%, 33%, and 36% after "four tough years in the industry" because "we were always a petitioner" (Royal Commission on Farm Machinery, 1968:

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[8] Fowler (in Phalen, 1977: 144) recounts how he was treated royally by Harry Cockshutt, by then retired as a former lieutenant governor of Ontario, when he visited Cockshutt's operation as part of a CCIL delegation. Harry Cockshutt impressed upon him that the company was "more than steel and iron, there was *the life-blood of the Cockshutt family* and its whole reputation was built into every machine" (emphasis added). Fowler had heard about Cockshutt's attitude toward farmers: "The story is told that the gentleman (Cockshutt) was quite a man to associate with "John Barleycorn" (a farmer) and that while … lieutenant-governor … he would hire a taxi … park … outside the gates … and stare for an hour or more at the tremendous factory and organisation which he had, in the main, created."

3731). Having gone "cap in hand" to Cockshutt, 36% was the best CCIL could get despite the fact that Co-op Fédérée in Quebec was getting a 40% discount from Oliver Farm Equipment, according to Brown. It is clear that Cockshutt dominated the marriage. Furthermore, just as UGG had encountered the "hostility" of retailers, CCIL was competing with a network of dealers to whom Cockshutt had first allegiance. In addition, such local competition would have created conflict between dealers well established in their communities and their supporters on the one hand, and those who sought to benefit from CCIL on the other, typically co-operative supporters. To add to the problems, Cockshutt merged with other companies. CCIL was forced first to renegotiate, and ultimately to find another supplier. Such changes disrupted service and repair-parts supply, undermining confidence in CCIL. CCIL's competitive position and scope within the industry had been effectively curtailed by the Cockshutt connection.

In his analysis, Simkin (1970: 48) concludes that "(M)ost large manufacturers find they need their own distribution system. It may be equally true that a distribution organisation needs its own sources of supply." Had the Board and management of CCIL perceived this fundamental reality at the outset, CCIL's path, if not its fate, may have been different. With their fixation on distribution costs, they seemed oblivious to the integrated nature of the industry and its implications for market entry. Simkin (1970: 48–49) makes the same point:

> The farm machinery industry is highly integrated; the large manufacturer is his own wholesaler and either has his own retail outlets or … a number of independent franchised dealers… The management of CCIL has consistently claimed that the main savings in the farm machinery industry are made in distribution rather than in manufacturing … (but given) control over an integrated operation, the traditional distinction between the two sectors of the industry … are, to an important extent, untenable.

The belief that substantial cost savings would be realised by co-operative entry into distribution is brought into question by Simkin's analysis of machinery distribution costs. He concludes that retailing economies of scale are limited, at best, and that "significant economies of this kind would arise only if the number of retail outlets were radically reduced" (Simkin, 1970: 25). A more detailed look at distribution costs prepared for the Barber Commission found no economies of scale in the United States but some in Canada. It concluded, however, that "We can be certain of economies of scale only in the size range (of dealers) up to $100,000" (Schwartzman, 1970: n.p.). Similar, perhaps more conclusive, evidence came from the Canadian Federation of Farm Equipment Dealers' "Cost of Doing Business Survey" in the early 1950s. It showed that, despite having more than five times greater sales, American dealers had a higher cost ratio—15.87% of sales, compared to 15.39% for Canadian dealers (Submission of the Saskatchewan Implement Dealers' Association, 1952: 5). Jock Brown, CCIL's president, had reached the same conclusion. At the Barber Commission Hearings, Brown said "We … have very detailed information … a depot getting $150,000 worth of business (is) not quite as economic as one getting a quarter of a million … above that the savings are of no account" (Royal Commission on Farm Machinery Hearings, 1968: 3750). All of this means that substantial savings of distribution costs throughout the industry would have been possible only with complete rationalisation of dealer networks. To fully achieve CCIL's objective, the entire industry needed to adapt to CCIL and its depot network.

The emphasis on distribution also obscured the opportunities available from manufacturing. In fact, based on figures in the 1966 Annual Report, Simkin demonstrates that the largest part of CCIL's surplus was from manufacturing not distribution. He provides an analysis that attributes $1,720,736 of the before-tax surplus to manufacturing and $938,389 to distribution. While this breakdown of surplus by origin should have been evident to CCIL's management early in their history, they steered clear of greatly expanded manufacturing. Simkin (1970: 14) identifies early differences in opinion among Board members about adhering strictly to their distribution objective.

Despite the obvious success of manufacturing the disker, CCIL did not tool up its factory to expand into production of tractors or, until later, combines. There may be very good reasons for this, which we will examine later. However, the reasons, which emerge from CCIL itself, seem not to be the sound, economic ones. The organisation continued to stress the importance of their distribution function and focused on insufficient sales volume to explain their avoidance of greater investment in manufacturing.

When questioned by the Barber Commission why CCIL had not manufactured tractors, Jock Brown provided such an explanation, albeit with contradictory results. Brown claimed that CCIL did not have the sales volume and, hence, the financial foundation to justify manufacturing tractors. Cockshutt, for example, did not start building tractors until 1946, even though they were a large company. According to Brown, Cockshutt waited until it had established a distribution network through National (Co-op) into the large American market (Royal Commission on Farm Machinery Hearings, 1968: 3717). Of course, Brown had given a good example, not of how a company stays out of tractor manufacturing, but of how a company could get into tractor manufacturing by establishing the distribution system and concomitant sales volume to reduce the risk occasioned by the substantial investment required for a manufacturing plant and tools.

Later in the Commission Hearings, Brown responded to the question of why CCIL did not buy out Cockshutt. He failed to identify Cockshutt's obvious reluctance in the matter. Instead, he pointed out that 60% of Cockshutt's production was for the central Canadian market. He claimed that CCIL could not supply this market but provided not a single supporting argument about CCIL's inability or unwillingness to do so (Royal Commission on Farm Machinery Hearings, 1968: 3733). Obviously, if insufficient sales volume was the limiting factor to entering tractor manufacturing, as Brown argued, then direct access to the central Canadian market through purchasing Cockshutt would have provided exactly the sales volume that CCIL lacked.

While logic seemed to escape Brown in his defence of CCIL's conservative manufacturing policy, his own parsimonious approach[9] in protecting the capital of the farmer members likely played an important role in adhering to such a policy. At the same juncture in the Hearings, Brown summarised his reasons for not manufacturing tractors by saying that "it is a good thing to know when you are satisfied." Such an attitude fit comfortably with the abhorrence within the populist movement of the wasteful merchandising practices and profit-making that was endemic to the (capitalist) farm machinery industry.

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[9] Former CCIL directors Roy Atkinson (June 26, 1991), Ken Gidluck (June 26, 1991), Alf Gleave (July 26, 1991), and Frank Deitz (June 26, 1991) identified this parsimonious approach.

CCIL's Changing Sales Policy

The purpose of CCIL, as identified in introductory literature presented to farmers, was "to buy machinery for its farmer members rather than to acquire machinery and then sell it to farmers." As Harry Fowler put it: "In other words, the farmer must mobilise to buy rather than wait to be sold" (Phalen, 1977: 138). The purpose was a direct consequence of the entrenched perception that large distribution costs were the cause of high machinery prices. Furthermore, the sources of the distribution costs—high-pressure sales techniques, wasteful advertising, and inefficient dealers within a saturated distribution system—were particularly repugnant to farmers and to adherents of co-operatives as the high-minded, 'for use, not profit' alternative to the existing industry structure. The following emerged in 1945 as the foundation of CCIL's first sales policy:

> 1. The distribution of all supplies to members in the most direct, efficient and economical manner free as possible of all unnecessary sales and service expense.
>
> 2. No dickering on trade-in machines.
>
> 3. Repair and field service designed to give the most useful service at the lowest cost.
>
> 4. Business for cash only (Simkin, 1970: 16).

The most efficient distribution system was deemed to be the familiar and widely dispersed agents of the Pools and UGG, and Co-op retail managers throughout western Canada. They would receive a commission of 2.5%. The final element of the policy was that any machinery trade-ins would be sold on a consignment basis only.

Without any apparent evidence of the policy's failure, it was changed in 1947. The change in policy coincided with the hiring of an experienced executive from the farm machinery industry. The prevailing industry attitude of stressing sales volume and merchandising the equipment to farmers came along with the hiring. Twenty-four salesmen were hired by CCIL to achieve the transition in sales policy.

This was a clear repudiation of the original intent behind CCIL. Jock Brown identified opposition to the policy change based on several arguments:

> a. that CCIL could never beat the machine companies at their own game, could never successfully compete with the thousands of machine company dealers…
>
> b. that whatever volume was secured … would never produce, after all the sales expense was met, a worthwhile reduction in the price of machinery;
>
> c. that CCIL had no warrant to give up the … basic proposition upon which it was founded until (it) had been demonstrated by practical experience to be invalid;
>
> d. that … it was better for CCIL to die in the course of an attempt to break a new path in distribution than to live a little better than another machine company.
>
> It was argued further … that if men were put on the road to sell machines, CCIL would nullify its appeal to co-operative loyalty … that the only way to get anywhere (with farmers) was to show them how they could save money acting as their own salesmen (Simkin, 1970: 22).

The shift in sales policy would surely have created conflict between members and the Board and management. Despite dissension that must have existed within the Board, this (and other) sales policy changes were implemented by management.

The original sales policy was also changed in 1952 to allow for purchase of trade-ins from farmers to be resold on the market as done in the rest of the trade. Trade-ins had been relatively insignificant in the early 1950s. But by 1966, sales of used equipment accounted for $8 million of CCIL's total sales of $26 million, with book losses from trade-ins at more than $4 million.

The decision was made in 1951 to move toward a system of 60 sales depots. Sales through local co-operative agents were discontinued, as the commission sales approach had been unsatisfactory. The new structure would provide an efficient network for both parts distribution and repair service. Twenty-five depots were established by 1952 and by 1968 there were 68. The depot structure seemed to make eminent sense, especially in respect of the original philosophy of eliminating inefficiency and waste. However, CCIL's depot system stood, well ahead of its time, as the model for rationalisation of the dealer networks of the major companies that eventually occurred.

Farmers' Attitudes to Buying Machinery

But the new depot system did not enhance CCIL's ability to compete for market share. In fact, it represented a significant withdrawal from the widely dispersed market structure of localized dealers within the industry. Despite some consolidation of the dealer network that had occurred by 1967, there were still 915 major and 815 short-line dealers licensed when the Barber Commission surveyed farmers on their attitudes to buying machinery. The survey showed that 60% of farmers travelled less than 15 miles to their dealer, and 84% travelled less than 25 miles; and as reasons for choosing a dealer, 88% cited the dealer's honesty, 70% said it was easy to get to, 60% cited dealer friendliness, and 28% because it was a co-operative store (Segall, 1970: 12 and 24). CCIL depots could not possibly vie for greater sales when, for most farmers, the familiarity and closer proximity of other companies' dealers would likely override co-operative loyalty or cash dividends. The move to the depot structure fit the philosophy of CCIL but not the structure of the industry.

Farmers were asked in the attitudinal survey why they would purchase farm supplies but not machinery from a co-operative: 43% identified the machinery as lacking variety or being too small. This fits with their reasons for buying new machinery—70% (the highest response rate) wanted a larger model to get their work done on time and 50% (third highest response rate) wanted a larger model to make better use of available labour. A further 18% of farmers didn't buy Co-op machinery because they were concerned about repair parts problems associated with foreign-made machinery, while 11% cited no Co-op dealer in the area, i.e., not enough depots. Only 5% claimed they preferred doing business with a private enterprise outlet (Segal, 1970: 21).

A Kansas study found a high degree of buyer loyalty either to brand or the dealer. Another done in the United States, "Farmers' Buying Habits—A Complete Study" found that the dealer was the sole initiator of a machinery purchase deal in only 9% of the cases (Simkin, 1970: 29–30).

Conflict With Its Roots

Apart from flying in the face of farmers' well-established buying habits, Fowler's injunction that "farmers must mobilize to buy, rather than wait to be sold" now seems inappropriate at best. Pervading CCIL's origins and self-analysis with an almost evangelical tone, this theme characterized the management tone and the direction of the organisation, as evidenced by the 1966 Annual Report. In response to the populist calls coming forward for holding the Royal Commission on Farm Machinery, the report adopts a pugnacious posture of self-defence:

> All the previous inquiries and also the present one came about as the result of *pressure from farm organisations and particularly from their western sections*. We believe that, instead of asking for still another Inquiry, the interests of western farmers would be better served by all farm bodies declaring that the previous Inquiries were right in their conclusions and that *farmer co-operation provided the answer* to high prices and other related problems. To ask for an Inquiry *tends, we fear, to discredit CCIL* and to weaken instead of strengthen confidence in *what farmers can do for themselves through co-operative action*. Farmers have the whole market for farm machines in their own hands, and having this, they have all power. All they need to do to achieve the main objective of lower prices is to use this power sensibly (CCIL, 1966: n.p., emphasis added).

It is difficult to understand why the CCIL management and Board would fear an inquiry as a plot to discredit them, especially when the pressure was coming from western farm organisations! Wrapped in the flag of co-operation but sounding as much like rugged individualists, the Annual Report presses on. Reaching a vindictive crescendo, it finally focused blame on farmers themselves, at least those who didn't buy from CCIL:

> Let us summarise all this by saying that there is nothing wrong with the farm machine business that the farmers can't cure by co-operative action. It is not only foolish but it is, in our opinion, weak and childish to cry for Inquiries, for government or any other kind of help, when all that is needed is for us to do the job ourselves.
>
> No person, no inquiry, no farm organisation, has ever been able to suggest any other kind of action than co-operative action to reduce prices and correct other matters in the industry that require correction. We are convinced that none ever will.
>
> Western organisations don't need to worry about those who prefer to buy from profit-making machine companies. They have made their choice as they have every right to do and, in so doing, have prescribed their own medicine (CCIL, 1966).

Apart from the lack of understanding of farmers' buying habits or the integrated structure of the industry, these remarks point out that CCIL's Board and management ignored ideas put forward as solutions to high machinery prices from within the same general populist movement that had attended CCIL's creation.

The social democratic movement had viewed state ownership as an instrument of social planning, which was a central theme of the Regina Manifesto and the CCF's appeal for political power. Coldwell, as a CCF Member of Parliament, had called for state ownership of farm machinery manufacturing plants, as noted above. Even the radical democratic element of the populist movement, despite its emphasis on group government, delegate democracy, and what Laycock calls "the almost mystical spirit of co-operation" (1990: n.p.), envisioned an interventionist state. As quoted above, the CCIL's 1966 Annual Report eschewed all association with the idea of government support for farmer co-operative presence in the farm machinery industry. It seems ironic that the government inquiries decried in the 1996 Annual Report were largely responsible for the creation of CCIL in the first place. It is more than ironic that the Annual Report rejects a plea for "any kind of help" when it had received government grants in order to get established and went more than once to its fellow co-operatives for financial bail-outs. Not wanting to appear "weak and childish" by crying for government help, the Board and management of CCIL chose instead to lurch proudly forward, toward an ignoble demise.

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Tractor Guidance Systems and the Family Farm

Ronald J. Palmer

Technological innovation has been the driving force behind much of the change experienced by Western society, with resulting improvements in medicine, industry, communications, travel, and most other aspects of life. However, technological solutions to existing problems may create new situations, which are not immediately recognised as problems—problems which may then be even more difficult to address and solve. Furthermore, technology brings about changes in lifestyle and values as well as changes in knowledge and the way work is done. Thus the perceived need for change versus the need for the security of the familiar predicates most conflicts experienced in the acceptance and implementation of technological innovation in modern society. Because of this basic conflict, technological change has been enthusiastically embraced or strongly resisted, depending on the type, scope, and timing of the change, and which segments of the population were most affected.

Agriculture is an economic, social and cultural phenomenon, a varied industry, which feeds the population as well as a way of life for many farmers. Science, technology and commerce have dramatically changed prairie farming practices in the last century, often transforming small, family-based operations into "agribusiness."

As with other technological innovations, eager acceptance of and strong resistance to the resulting change has been experienced in the agricultural community. Farmers in the past were eager to adopt any technique that would improve their operations—provided they could be convinced of the benefit. Farming techniques at the turn of the century were much less sophisticated than they are now. Few chemicals were used on farms and horse-drawn implements were slow. Weedy fields were common because the only means to keep weeds under control was by slow cultivation of summerfallow. Farming with horse-drawn machinery was very labour and time intensive even though farms were small. A good farmer was a farmer who had no weeds in his field. To this day much of farming practice is predicated on a deeply imbedded cultural hatred for weeds.

Innovations in machinery and farming techniques adopted by prairie farmers over the past century attempted to solve the ongoing problem of weedy fields. Tilling and the application of chemicals focused on the elimination of weeds and the enhanced growth of crops. Not all of these practices have been a benefit in the long run. The more serious problems of soil erosion and soil degradation have been given less attention.

As tilling equipment became more efficient and as horses gave way to more powerful tractors it was possible to accomplish more tilling to control the weeds. This in turn led to over-tilling and was one of the causative factors in the huge dust storms of the Dirty Thirties.

The use of chemicals and fertiliser—which has become the trend of modern farming—increases crop yields through better weed control and increased nutrition, but it adds to input costs. Environmentalists have also raised the question whether extensive use of chemicals and fertiliser may (through leaching into water systems) do damage to the environment.

As farming equipment became more powerful, it also became larger. Farms and farming techniques changed to accommodate the new, more "efficient" machinery. Today farms are large, with large equipment. Mixed farming has given way to huge farms that grow just one crop (monoculture). This has left the farmland more susceptible to crop specific pests. Clearing bush to make way for larger machinery has deteriorated the soil and brought short-term gain at the price of increased soil erosion and lower water tables.

Farmers today are more dependent on outside factors. The farm is not self-sufficient and everything from fuels to chemicals must be bought. Farmers are less flexible, more vulnerable to adverse conditions, and find it more difficult to weather tough economic times resulting from low grain prices or drought.

Despite growing evidence of problems associated with extensive use of chemicals and the risks of monoculture, today's farmers are reluctant to admit that modern farming techniques are not the ultimate of efficiency. I believe that by adopting more innovative technology, farmers could become *more* efficient[1] and also solve some of their current problems. Two technologies that will make farmers more efficient are positioning and automation, both of which use computers. Today's farms are mechanized and larger. New computer technology, if used properly, could enhance the fortunes of farming, but what changes are in store for the farms of the future? Will they be bigger or smaller? Will the labour skills increase? What will happen to the family farm? With all these questions to be considered, the adoption of computer technology in farming will not happen in just a few days. Farmers have huge investments in their existing equipment and they are comfortable with their current farming practices. They are resistant to innovations which will fundamentally change the means and methods of farming, and which will require them to master a new technology—that of the computer. However, as problems associated with current practices become more acute, the limitations of these practices will be recognised and new means to achieve efficiency, such as positioning and automation, will be sought. However, it will

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1. Efficiency here is defined to mean the difference of crop returns minus expenses. Sometimes this is mistaken with productivity, which has little regard for expenses. There is no doubt that for farmers to remain viable, the expenses must be part of the equation.

take years to make the change and the process of recognition and acceptance will likely be incremental.

Steps to Farm Automation

This section speculates on the possible steps involved in the adoption of automatic farming techniques, from recognition of limitations and problems in current practices, to initial steps towards solutions, to the ultimate adoption of fully automated farming techniques. The essentials of an automated system are the ability to electronically sense positions in the field, the subsequent ability to make steering corrections and finally to steer automatically from a pre-set program.

Farmers currently have large equipment, which is difficult to drive accurately, especially in operations in which visibility is impaired. It is difficult to make passes without missing or overlapping. The consequences of missing far outweigh the waste of overlapping and typically these result in overlaps by as much as 10% of the implement's width (Palmer and Matheson, 1989). Foam markers and disk markers tend to be awkward, expensive and inadequate. Because of the current need for a better driving aid, the first step towards automation will likely be the adoption of electronic-radio positioning to replace existing markers. An electronic navigation system could pinpoint the location of a farm vehicle to within inches and could therefore be used to aid the farmer in making more accurate passes. This could be done in two ways: the farmer could follow predetermined passes entered into the system or he/she could follow a path determined by the last pass. In any event more accurate driving results in less overlap. Thus, the positioning technology would help the farmer to drive well. This would motivate the farmer to install a navigational system in his/her existing tractor.

The display used to aid the farmer must take into consideration human factors. The farmer would use this device hour after hour and a "heads-up" display might prove to be worth the extra cost (Palmer, 1989).

There have been some early pioneering attempts at electronic farm navigation. The requirements for a farm positioning system are described by Palmer (Palmer, 1990a). To date, the devices have been too expensive, unreliable or both. What is needed is a relatively inexpensive reliable system. Currently there are two contenders for this market: GPS (Global Positioning System) and Accutrak Systems Ltd.

Although adding a navigational aid helps the farmer to reduce overlap, there still is error in tracking from the indicator. This can be corrected, because the navigational system "knows" the position error exactly at any given time. Why not let the navigation system compensate for this error? A small hydraulic ram could be put on the drawbar to position the hitch, and consequently the implement, in such a fashion as to compensate for driver error in tracking the desired path. If the hitch were swung a meter, this would greatly reduce the stress of driving and would almost completely eliminate lateral overlap.

Having the navigational system compensate for driving error has been successfully attempted with a sprayer (Palmer, 1990b). Instead of a ram, the end nozzles were controlled by solenoids, which were activated by the navigational system.

Unfortunately the farmer is the weak link in the driving loop process. The farmer might well conclude that if the navigational system is capable of compensating for his/her errors, why not let the navigational system steer in the first place? Thus, the next logical step is to close the loop to eliminate human intervention. Farmers may reach this conclusion, but only after they acquire trust in the system with themselves in the loop.

Auto-steering also requires additional investment. Modifications to the farm vehicle's steering system are required to enable either the navigational system or the operator to steer. There is also a reliability issue. One would certainly not want the auto-steering to activate erroneously when driving on a public road.

With auto-steering installed the farmer would only make the turns and could sit back and relax on the passes. Once farmers become accustomed to the system steering on straight passes, they may look at further enhancements to improve the situation. If the navigational system can do such a grand job on the straight passes why could it not do the corners, the turns and perhaps the whole field? Why is it necessary for the operator to be on the vehicle at all?

The next step would be to address inefficiencies in turns at the headlands of the field edges and in negotiating obstacles. Liu (1988) has devised a method to map a field and the obstacles within it, and then to find an almost optimum route that will cover the entire field with the shortest path. The field map is obtained by driving the perimeter of the field and the obstacles with the navigational system in a "monitor" mode collecting the set of positions that represent the driving path. This data is then processed through a program that, taking into consideration the desired working direction, the implement width and other pertinent information, yields a path to follow.

With the field map and the field path entered into the navigation system, the driver now literally "goes along for the ride" with much more time to monitor the implement. Some will let the machine do a round or two while they are eating lunch. They will still monitor the implement closely. Once trust is gained in the system, however, the machine will be doing large areas of the field unattended. This is the critical step in achieving more efficiency. Once the farmer accepts the idea that he/she is not required to directly drive the tractor and is not required to sit on the machine, the obvious question arises: Why must one be on this vehicle?

The argument for using large equipment also becomes less compelling. The only economically valid reason for using large pieces of equipment is the operator's time. In terms of input costs, small equipment is actually more efficient; but large equipment has prevailed due to the necessity of covering large amounts of land in short periods of time. Many small pieces of equipment working 24 hours a day are more efficient than one large one of equivalent collective power or coverage width (Palmer, 1984). This efficiency can only be realised with the removal of the on-board human operator.

Row planting is used with many crops. This technique could also be applied to grain crops if driving between the rows could be done accurately. Typically corn is grown with a row spacing of 30 inches and cultivators are driven between the rows manually to remove the weeds. The same could be done with grains with 8-to-10-inch row spacing, but the driving would be onerous if done manually. This problem would be solved if the driving were done with a small automatic implement using the navigational system and a vision system (Runtz, Palmer and Sudom, 1990) that would lock onto the row and give the accuracy required to keep a cultivator between the rows.

Weeds could also be eliminated by other means besides cultivating. Lasers or high-pressure water knives could be used. This would cut the cost of farming by decreasing the amount spent on chemical herbicides and fuel.

With row planting and automatic steering, weeds could be eliminated between the rows but the weeds in the row itself would remain. To address this problem, the plants could be seeded with precise spacing within the row and with a precise pattern among the rows. The vision system could then lock not only on to the row, but also on to the pattern. Any plant outside the pattern would be considered a weed and would be eliminated with one of the techniques mentioned earlier.

Some interesting opportunities arise from precision planting. Chemical herbicides would be unnecessary. This would lead to the opportunity to grow more than one crop simultaneously (polycultures rather than monocultures). Summerfallow would no longer be necessary since, in effect, there would be summerfallow between the rows. Fertiliser could be injected precisely in terms of location and amount to meet the needs of the individual plant as it is growing. This would reduce risk and ultimately reduce expenses.

In the past fields have been treated as flat, homogeneous entities with no regard for variability. Recently this variability has been recognised and is being studied in an effort to apply inputs to match the requirements of each location. Seeding rates, fertiliser rates and chemical rates should be varied to match the varying field conditions. This practice is already starting and it is an appropriate technology for automated equipment.

To study the effects of variable rate inputs, it is necessary to monitor the results of those decisions. Mapping the yield of a field can do this. Average yield for a field is not indicative of what is happening in any given part of the field. One must know the yield for each spot of the field and then analyse the yield versus the input costs for that particular area. Researchers are currently seeking practical "instantaneous" yield monitors (Schueller and Bae, 1987).

The final step to automatic farming would be the implementation of the small, fully automated tractor. If the farmer is not sitting on the tractor there is no reason why a number of smaller tractors that would drive precisely and slowly could not be used.

Impact

Implementation of fully automated farming techniques would have an impact on many aspects of farming: economic and production factors, environmental factors, and work-related factors. Farming practices would become more efficient in terms of inputs and outputs, in overall soil management and in the provision of a healthier environment in which to work.

Smaller tractors and smaller implements would make farming more efficient. Electronic boxes used for navigation, variable rate, and tele-monitoring would replace operator niceties, such as cabs and air conditioners. The net capital costs would be significantly lower.

Operating costs would also be lower. Since smaller, automated tractors travel at a much slower speed and cultivation is limited, fuel bills would be much smaller. Seeding would be done precisely and more sparsely since the crop would no longer be used for weed control; less seed will be required. Chemicals such as herbicides might not be required at all. Inputs such as fertiliser would be used more precisely and only as required. This would make the fertiliser more effective, and as a result less would be required.

The input costs could be reduced by 50% or more. This obviously creates a greater profit margin. If these efficiency gains can be captured as net income within the farm sector, then the need for government subsidies should diminish.

The use of this technology will also have an impact on the quality of the food. Increasingly consumers want food that is perceived to be "chemically-free" or "organically grown." Automated farming techniques are well suited to that type of production. Not only does the farmer gain because of lower costs associated with a chemical free farming, the product could potentially fetch a premium price.

Furthermore, the public would like "sustainable agriculture." Farmers must be good stewards of the land so that it will remain productive for the generations to come. The greatest threat to sustainability is the degradation of the land due to wind and soil erosion. The techniques suggested above lend themselves to the elimination of summerfallow with ground cover being present at all times. Erosion could be curtailed.

Summerfallow is practised to allow the land to restore a reserve of water over a season. Weeds and crop use the water: so, since the "dryland farming movement" of the early 1900s, the thinking has been that if weeds and crop are kept off the land for a season, the land will accumulate water. This is true to an extent; however, ironically summerfallow in the long run destroys the water carrying capacity of the soil by allowing erosion to deplete the organic content. The automatic tractor techniques permit sparse crops to be grown every year to keep the soil covered with a layer of organic matter. This results in a soil that can hold more water. Since the soil is not tilled and turned over, as it is in summerfallow, the water is not wasted through evaporation.

There will be also less dependence on monocultures. It is difficult enough to find a chemical that will control the weeds for one crop; it is even more difficult, if not impossible, to find chemicals that will control weeds for two or more crops simultaneously. Thus it is currently practical to grow one crop in a field because chemicals are used for weed control; this practice is called monoculture.

Without the dependence on chemicals, it is quite possible to simultaneously grow more than one crop in one field. There are crops that can be grown together with mutual benefit to each crop. For example, a legume grown with another grain can provide much of the nitrogen that is necessary, while the grain provides a structure for the legume to cling to. These are called synergistic relationships—the species help each other.

The advantages of polycultures are potential reduced-input costs, better soil management, and less susceptibility to crop-specific pests and less likelihood of total crop failures.

Another important impact is a healthier work environment. Many of the farm chemical containers have labels that warn the applicator not to allow the chemical to come in contact with the skin. Even with all due care and attention a spill and skin contact is possible. Chemical-free farming eliminates this risk.

Some chemicals require the applicator to wear a mask with air filtering apparatus. However, on hot days these masks are uncomfortable and are often not worn. Also the filtering material, which is often charcoal, is not replaced on a regular basis. After many years of even small amounts of exposure the effects can result in chemical poisoning (do Pico, 1992: 311).

Farmers now drive tractors for prolonged periods of time over rough terrain. This can lead to or aggravate lower back problems. With automatic equipment, the operator no longer would endure long hours of driving and therefore would not suffer the painful consequences.

The environment is suffering because of the use of farm chemicals. Chemicals applied to one field can drift for miles, doing damage to other crops, trees, and wildlife—not to mention the damage it does to people. The chemicals also leach into the ground and enter the water table. The concentration of nitrates and other chemicals in the water supply is of growing concern (Booltink, 1995: 251; Barber, 1993: 12).

Reluctant Acceptance of the New Technology

All the potential benefits of this new technology should provide compelling motivation to farmers to embrace immediately and enthusiastically automated techniques.

Yet, more than ten years have been spent spreading the "good news" to farmers. In the early years, farmers reacted with harsh resistance, which more recently has softened to curious reluctance. My question is: Why would a farmer be so opposed to this change, when the end results would be so beneficial to profit, health, and sustainability. I can only speculate why there was and is such a reluctance to accept this change in farming.

One reason is related to capital investment. Farmers have substantial investments in equipment—it would be unreasonable not to make use of it. Typically the equipment lasts for ten years. The most opportune time to make a change would be when a new piece of equipment is to be purchased. There would therefore be a natural lag of five to ten years before any major change would occur.

Computer phobia is also a significant issue. It is never said outright, but there are many people who want nothing to do with computers. They know nothing about them and are not interested in becoming computer literate (much less computer experts). They do not know how to type and they think it would be too frustrating to learn. Anything that appears computer-like is met with not only resistance but also fear.

Certain technologies have a social status. The equipment used today is big and "macho." When you drive one of those big four-wheel-drive tractors you feel like somebody that can get a lot done. It is a sign of a "big-farmer." Going back to small equipment is not progress. One farmer sincerely stated: "I have worked all my life to get big equipment—I don't want to go back to small equipment."

Demographics also play a role. The average age of farmers across the prairies is mid-fifties. With age comes a natural tendency to stick with the familiar and to change less. Many farmers are on the verge of retirement. Why would they want the trouble of pioneering a new technique? Many farmers have expressed this opinion.

As was stated in the first part of this chapter, the evolution to automatic farming will proceed through several steps. Unfortunately the first step, providing an electronic marker, has only marginal payback. The investment may be recovered in three to four years. The real benefits come with fully automatic, driverless tractors, but only after several years. Most farmers would like the advantages of automatic farming, but they would like someone else to pioneer through the first stages.

No less important is the role of machinery business. Many companies have vested interests in having farming stay the way it is. They are making healthy profits from existing techniques, and they are the ones that would lose if things changed. Ironically these companies support agricultural research with their marketing budgets; they will therefore do research and support new techniques that maximize their profits. Let us be honest and practical here: they are only very indirectly concerned with the well being of the farmer, his land and the environment. To abdicate the agricultural research to these entities is like "leaving the fox in charge of the hen house."

Finally, there are those that would argue that the new automated farming techniques would only be an advantage for the large farmer. The larger farmer would be in a position to learn the new techniques or to hire people that could fully utilise them. This is not necessarily the case.

In fact, the new automated farm techniques might favour small to medium-sized farms. The reasons for this are as follows. First, the main reason for going to larger farms was because of a very narrow profit margin. With reduced input costs the profit margin may increase and a small farm may once again become a viable enterprise. Second, the automated farm techniques work well in concert with a diversified farm. Polycultures with berry shelterbelts, livestock, and certain other types of on-farm business fit well into this scenario. This does not describe the characteristics of large corporate farms. And third, it is believed that a farmer is only as good as the land that he knows intimately. Clearly, as farms get larger, farmers' knowledge of their land decreases. Automated techniques will require and facilitate the recovery and advantages of that detailed knowledge.

Conclusion

The advantages of adopting automatic farming techniques are obvious; yet, it will take some time to develop and adapt the existing technology to agriculture. It will also take time for farmers to accept and gain trust in these new techniques that are quite foreign to them now. Also, for practical purposes it will take time to phase out existing capital investment. The question is not, will there be automatic, farming but how and when it will be adopted.

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The Adoption of Conservation Tillage: An Understanding of the Social Contexts

Alan Hall

Over the last two decades, there have been increasing calls for the transformation of farming practices from conventional to sustainable agriculture (Canada, Standing Committee on Agriculture, 1992; Advisory Panel on Food Security, 1987). This has led to sociological interest in understanding the decisions of farmers to adopt or reject various new production practices, technologies and management methods (Nowak and Korsching, 1985; McNairn & Mitchell, 1991; Stonehouse and Bohl, 1993). One of the major changes has been in tillage practices, specifically the growth of "conservation tillage" as a means of conserving soil and water quality (Ervin and Ervin, 1985; Smithers and Smit, 1989). In an effort to understand the process of farmer decision-making, this paper looks at the various local social contexts in which grain farmers in southwestern Ontario adopt or reject conservation tillage on their farms.

The Rural Sociology Literature on the Adoption of Sustainable Farming Practices

In looking at the development of sustainable agriculture on the farm, most of the rural sociology literature has been focused on the individual male farmer as the decision maker (McNairn and Mitchell, 1991; Connoly and Hilts, 1988; Nowak, 1983). Grounded largely in the adoption-diffusion models, considerable research as been focused on trying to identify the characteristics of individual farmers that differentiate those who adopt the new methods from those who do not (Thomas, Ladewig and McIntosh, 1990). Attributes such as age, education, risk orientation, environmental orientation, the perception of environmental problems, and other individual characteristics have been examined extensively as correlates of sustainable agricultural practices (Connoly and Hilts, 1988; Allen and Bernhardt, 1995). As researchers recognized that the adoption of sustainable practices were often based more on economic considerations than environmental ones, attention shifted to the characteristics of the farm as the other major set of variables, including farm size, profitability, capitalization, debt load and type of operation (Saltiel, Bauder and Palakovich, 1994).

While producing important insights, these studies of farmer and farm attributes have often yielded quite contradictory findings. For example, while some studies have suggested that younger farmers were more likely to use conservation farming methods, other researchers found that there was no relationship between age, adoption patterns, and environmental concerns (Connoly and Hilts, 1988; Napier and Camboni, 1993). Similar problems of contradictory findings have emerged in other efforts to pinpoint specific characteristics such as education and farm size (Connoly and Hilts, 1988). It has been suggested by some analysts that these inconsistencies may reflect our failure to differentiate the kinds of alternative practices being adopted and to recognize that different farm operations may select different kinds of "sustainable practices" on very different grounds. For example, Lighthall (1995) argues that larger "quasi-capitalist" farms with 1,000 acres are more likely to adopt no-till farming methods because no-till fits with their management emphasis on achieving profitability through increased scales of production (i.e., the labour and time savings of no-till allows these farmers to expand their land base). Smaller and medium farms, on the other hand, are more likely to adopt low-input methods such as ridge till as their most viable strategy because the method fits with the production scales and management capabilities of these operations.

However, while some of the inconsistencies in the literature have been clarified through further research, this paper is aimed at addressing a number of persistent concerns. To begin with, although many analysts recognize that the adoption of sustainable practices is a social process influenced by various factors, few studies use methodologies that allow us to examine this process directly. Most are survey studies, with relatively few collecting qualitative data, and those that do are largely limited to interview methodologies (McNairn and Mitchell, 1991). As such, our understanding of the process of decision making is still very limited, largely inferred from research, which is really a listing of correlates, which only provide a highly generalized and abstracted picture of how farmers come to view and adopt certain sustainable farming methods over others.

The reliance on survey methodology also reinforces an under-conceptualization of the process of decision making and knowledge construction, which includes a limited understanding of how personal and social factors operate to shape that process. Most analysts rely on some version of an adoption-diffusion model which tends to see the process as one in which scientific knowledge emerges and is introduced to the community via various formal and informal channels of communication (Rogers, 1983; Fliegel and van Es, 1983). This information is then learned and accepted by the individual farmer depending on a fixed set of social psychological and sociological factors. What we are missing is a conceptualization of how the farmers make this externally imposed scientific knowledge their knowledge, knowledge which they believe in, which they adapt to fit their circumstances, and which they integrate into their existing knowledge of the way farming, the environment, and the world work. In other words, we require a more direct view of the active social construction methods used to transform externally produced and communicated information and ideas into personal and localized knowledge and beliefs.

An additional problem is the failure to look more closely at the specific social relations and contexts in which knowledge is constructed. Although the importance of the local community, farmer organizations, the state and agribusiness in farmers' decisions have been identified by researchers (e.g., Stonehouse and Bohl, 1993), we rarely look directly at how farmers relate to and interact within these institutionalized contexts, nor do we examine how the structure of those relations then influence the construction of knowledge by the farmer and the community as a whole. Along the same lines, many researchers have pointed to the importance of informal social relations and networks (e.g., Nowak and Korsching, 1985). Yet, again these are looked at largely as discrete factors that influence the adoption process without ever actually studying them directly as discursive sites in which scientific and local knowledge are discussed and worked out between farmers (Feldman and Welsh, 1995: 27).

Moreover, there are some glaring holes in the kinds of social relations that have been examined, with particular reference to the absence of attention to kin and gender relations. Here in particular, we see a problem with the focus on the single or main farm operator, usually the male, as the independent decision-maker. What this reveals is our tendency to ignore the process of decision making more directly. As Feldman and Welsh (1995:27) suggest, when we look at the decision-making process we find that the individual farmers' knowledge and decisions have been negotiated and transformed in direct social interactions in structured contexts like the household and the extended family. As such, it is not just a question of what an individual works out on his or her own; we need to understand the concrete social relations in which the farmer is imbedded.

Finally, it is important to recognize that much of the research on sustainable agriculture tends to recognize only "one kind of knowledge" as being relevant to the investigation. Specifically, the diffusion and acceptance of "scientific knowledge" is privileged as the knowledge which must be diffused and adopted, while existing and often contesting local or personal knowledge, if recognized at all, are largely seen either as impediments to the desired adoption/diffusion outcome. As Kloppenburg (1991) has pointed out, this gives little credence to the validity of local knowledge and its importance in shaping what sustainable agriculture becomes at the level of the farm operation. This privileging of the scientific knowledge also fails to recognize that the knowledge being promoted by various institutional interests as "scientific" is itself socially and politically selected. As such, whatever its potential value to the environment, and conservation tillage does offer some environmental advantages over conventional tillage, we fail to acknowledge the hegemonic character of officially promoted views of sustainable agriculture; that is, we do not recognize that the dominant scientific discourses often exclude other potentially more favourable environmental alternatives such as organic or low-input farming (Adkin, 1992; Hall, 1998b).

In an effort to address these concerns, this study uses an ethnographic approach to examine the decisions of farmers in a southwestern Ontario county to adopt or reject certain kinds of sustainable practices. Rather than the characteristic focus on the attributes of the innovative farmer and farm operation, the analysis examines the process that farmers go through as they construct and reconstruct their knowledge of sustainable practices that they have adopted or are considering. First, we examine the key methods which farmers use in making their decisions. The analysis then places the decisions of each farmer specifically within an understanding of the structure of local farm community and local farm organizations, the structure of kin relations, and the structure of gender relations in farm and household production. A number of tentative arguments are made which suggest that an understanding of how these relations are structured provides important clues which explain the construction of both dominant and alternative knowledge and ideas among farmers.

A total of 16 months was spent in one southwestern Ontario county interviewing and observing forty local grain farmers and farm leaders on the farm and interviewing twenty local government and agribusiness representatives, and attending local farm organization meetings, agricultural shows and crop or equipment demonstrations. Much of the data collection was centred on twelve case studies of grain farm operations that were selected to represent a range of farm sizes and farming methods (conventional tillage, ridge tillage, no-till, and organic farming).[1] In each case, the male and female owners/operators were interviewed in two separate visits over the winter. Questions were aimed at getting the farmers to describe and explain the history of their farms and their farming practices, emphasizing in particular any recent changes such as the shift to no-till farming. Five to seven days during the growing season were spent at each farm working and observing. It should be recognized that this study was looking at an early point in the transition stage (1993-94) where the majority of the farmers in the county were still conventional tillage farmers. Conservation tillage is now the dominant method.

Understanding the Process of Knowledge Construction

As noted, when we want to understand why farmers adopt or reject a new method of farming, we usually focus our attention on the individual motivations and orientations of the farmers and on various farm characteristics. Most of the farmers interviewed or observed in this study were conventional grain farmers who were adopting conventional tillage primarily for economic reasons or because they were interested in reducing their labour time in the field. While many were conscious of soil quality issues, and were partly motivated by a belief in their responsibility to conserve and preserve the soil for future generations, the economics of no-till were critical to their decisions.

> Q. Why did you decide to switch to no-till?
>
> A. Our ploughs were getting worn; we were going to have to replace the equipment eventually. We were looking for ways to trim costs. And also the bigger factor was probably the time that it took to do these jobs. We were just running out of time, the weather didn't cooperate in the fall then we couldn't get some of it done.

Very few perceived a major soil erosion problem on their land, which partly reflects the fact that most of the farms are flat with heavy clay soils. And indeed, for those who rejected no-till, concerns about the possible effects on their yields were the central reason—it was not a risk they felt they could take. Some of the smaller farms—less than 150 acres—had also rejected no-till because they did not have the funds to buy new equipment.

However, among both farmers who had rejected and accepted no till, there were a few

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1. No-till farming refers to the elimination of tillage or the planting of seeds in untilled soil. Ridge till refers to the development of ridges for crops and the reduction of chemical use by narrow band spraying and/or mechanical cultivation. Conservation tillage usually refers to some effort to reduce tillage and maintain more residue on the field.

who were very concerned about water quality and environmental issues. These farmers liked the idea of eliminating their use of chemicals, and indeed some had rejected no-till precisely because they believed it was being pushed by the chemical companies to increase the farmers' dependency on synthetic pesticides and fertilizers. However, most of the environmentally oriented farmers who had moved to no-till rather than organic farming had done so because of land ownership issues—they did not control the land they were farming.

While this focus on motivations and ideological orientations gives us some understanding of the different conceptual frameworks underlying farmers' decisions, it tells us nothing about the social processes underlying the decision making. However, we can begin to do this by sketching out some of the key features of the decision making and knowledge construction that were evident in the case studies and in the interviews.

Methods of Finding Knowledge, Developing Experience

First of all, when male farmers were asked to describe how they had come to their decisions to accept or reject the use of no-till farming or other alternatives, it was immediately evident that their "decision" was a very active ongoing process. Each farmer had engaged in a variety of activities aimed at finding out "what they needed to know" to make a decision. These activities were understood by them as "the things they needed to do" to convince *themselves* whether no-till "made sense," and whether it would "work" on "their land," "in their operation." In that sense, it was understood as a very personal process. For most of them, it was not a matter of being convinced by others, but rather it was something they had to see for themselves on their land. It is also important to point out that although it is often argued that conventional farmers are very "science-oriented" (Beus and Dunlap, 1991), most of the farmers in this study were very sceptical of scientific and government claims and it was largely on that basis that they felt they had to see for themselves. As one stated,

> Look, I've been farming for a long time and I remember when they [the government] told us to cut down all our windrows and plant to the ditches; now they tell us it's all wrong. I have to see if it's going to work for me. I'm not going to take their word for it.

While there were significant variations in the order, amount and character of farmers' activities, all the case studies reported a certain common set. The initial steps in making the decision to "try it out" included reading farm media and government materials, attending training seminars and demonstrations, observing other farmers' fields and discussing experiences with other farmers (Thomas, Ladewig, and McIntosh, 1990). At some point in this process, and the amount of time spent on this preliminary knowledge gaining process would vary, farmers would usually decide to establish a trial plot on their farm. This was the critical stage in the adoption process in that it was through this one activity that farmers constructed a very personal and direct understanding of the method. In some cases, this was a matter of taking an opportunity as it arose to try the method out.

> We made the decision to try no-till when a wheat field went bad—it was an opportunity. We weren't expecting nothing great but the yield was greater than we thought. It sure convinced me.

For this farmer and others, the trial field or plot provided the "proof" they needed to confirm what they had read, had been told, and had observed in other farms.

> Q. How did you get started with no-till?
>
> A. We tried it on a limited basis in '91.
>
> A. How many acres was that about?
>
> A. That was about 12–14 acres in '91 of soya… So we proved to ourselves in the last couple of years with the limited acreage that we have used that no-till will work. I'm not sure that it will work in all conditions. But it will work. We haven't done it in corn yet. I'm not convinced that we can do it in corn yet.

As this quote also suggests, even those who had been using no-till for several years reported that they were continuing to actively gather information and test out the use of the method in different contexts. This ongoing process often led to continuous modifications in their knowledge and in their use of no-till methods, which also meant that the meaning of no-till shifted to some extent over time. Three of the four case studies that were using no-till extensively decided during the study that no-till did not work in wheat, and two also expressed continuing doubts about using it in corn. Two had also decided more generally that being a no-till farmer did not mean a fixed program of no tillage—whether to no-till a particular field would depend on various factors such as the weather and certain characteristics of the soil that they would assess on a year-to-year basis. The two others adopted the view that a successful no-till farm required a stricter adherence to little or no tilling. Critically, any modifications in how farmers understood and used no-till were understood by them as personal or individual choices that reflected their own particular circumstances.

This theme of trying to develop their understanding of how the method worked in their own situations was a recurring feature of virtually all the case study and interview descriptions. The emphasis on "seeing for themselves" seems to represent an important point where the farmer begins to accept the "fact" that this method really works, not just for others, but also for them personally.

On the other hand, the continuous modification of farmers' views and knowledge also suggests that even after several years of adopting a new approach to farming, farmers were not taking these views and knowledge entirely for granted. This may reflect what Lighthall (1995) suggests is an overall orientation of the farmer in the 1990s towards the need for continuous innovations. In other words, faced with major and persistent threats to their financial survival, farmers are forced to continuously look for ways to increase productivity, prices and cost-effectiveness. As one farmer put it, "No till has to prove itself to me every year." Certainly, the comments from my case studies suggest that this kind of post-fordist orientation towards the need for continuous improvements in productivity was significant in encouraging farmers to constantly evaluate and re-evaluate what they are doing (Marsden, 1992). As one of my case studies stated:

> Farm management has definitely changed: you have to keep up with all the new technical advantages, and machinery has changed as well. Machines that we have today are capable of doing a lot more than what they did 20 years ago. Same with management, I think you have to be on top of budgeting, on top of marketing, everything. You have to pay attention. The person that is not paying attention in this business today is not going to be here tomorrow—in terms of marketing, in terms of input cost, in terms of new technologies. You have to be up on your inputs—you can save a lot of expense if you pay attention to what is happening in the marketplace…

Yet one critical point that needs to be recognized here is that while most of these no-till farmers were continuously evaluating their use of no-till methods and what it meant to be a no-till farmer in economic and production terms, this does not mean that they were actively considering a wide range of sustainable options. In a few cases, the ruling out of other alternatives such as ridge till and band spraying, both of which can also save substantial costs and reduce chemical usage, was based on their prior "failed" experimentation with these approaches. These "experimentally oriented" farmers actively practiced their claim that they constantly try out new ideas and methods. In case of most farmers however, the decisions to reject these "other" methods were based on what they had been told and read which, in their view, was sufficient in itself to decide that they weren't "viable" or were "too risky." They waited to see whether there was an emerging consensus among local farm leaders and extension services, and over time, certain "truths" began to be taken for granted concerning which alternative methods were workable locally and which weren't.

> Q. Have you considered any other alternatives to no-till such as ridge till?
>
> A. Ridge till was tried around here in the early 1980s.
>
> Q. Did you try it yourself?
>
> A. No, but it just doesn't work on our clay soils.

In taking for granted certain kinds of knowledge about certain alternatives, the farmers are indicating the importance of what factors shape their initial choices—and while common, taken-for-granted knowledge is still crucial, such as accepted beliefs about what will and will not work on clay soils, it is also at this point of the process that we can see the central role of scientific knowledge as presented and promoted through organizational and institutional channels and policies which support certain options and alternatives over others (Macrae, Henning and Hill, 1993).

It is also interesting to note that farmers varied in the extent to which they felt it was important to test out or research the "environmental" advantages of no-till, as opposed to the productivity and economic effects. Some, particularly those who expressed a greater concern that soil erosion and fertility were problems on their farms, were involved in local monitoring programs or studies which allowed them to assess the environmental effects. However, very few farmers had carefully gathered or considered any evidence on potential environmental problems associated with the continued reliance on chemical inputs in no-till, and virtually none had done any meaningful research on organic farming. Most were willing to largely take the environmental gains of conservation tillage and the insurmountable problems of organic farming as givens.

> *First Farmer:*
>
> Q. Do you think that no-till, given that it still relies on the use of chemical pesticides and fertilizers, still presents an environmental risk?
>
> A. Oh, we know enough about it. It works. I don't argue with them [the government and the researchers]. There are regulations and specs for using them [the chemicals]—it's safe.
>
> *Second Farmer:*
>
> A. The yield is my concern—if I'm not making money I'll go back to conventional farming.
>
> Q. What about some other approach—organic farming?
>
> A. Are you kidding, I'd starve, there's no market for it.

Thus, for these two case studies, the only "real" choices which they perceived were between conventional tillage, some reduced tillage, or no-till. Low or no chemical input farming methods were widely constructed by these and most other farmers interviewed as "uneconomic" and ridge till as "too risky" (Lighthall, 1995). In that respect, some major aspects of what was possible in terms of sustainable farming were largely taken for granted by many farmers, as was the claim that the method which they had adopted, no-till, was preventing chemical pollution and further soil degradation.

As this suggests, for some farmers the relatively easy acceptance of the environmental claims for no-till, as opposed to the economic ones, reflects the farmers' primary concern with production and profitability issues. However, as noted earlier, this is also mediated by the level of concern which farmers express about soil conservation and pollution issues (Lighthall, 1995). Overall though, the farmers appeared to devote considerably more time and energy to making sure that they had the knowledge to judge whether no till would work for them economically, while the consideration of other alternatives and other types of knowledge (i.e., environmental knowledge) occupied much less time and energy.

The Influence of Formal Organizations, Agribusiness and the State

As noted above, farmers used various other methods of finding information and ideas while constructing their view of no-till as a method they could use. Although most reported that they obtained some of their initial information or ideas from farm media sources, farmer organization newsletters and government publications, the key sources were their formal institutional ties and networks. An important starting point for many were farmers' meetings and training sessions.

> I've gotten involved in a lot of the producer-oriented meetings and that kind of thing and keep myself abreast as to what was going on *out there* [my emphasis]. Because if you don't … you got to know what is happening.

In this county at least, these organizational contexts were critical locations in which certain kinds of externally constructed solutions became constructed by local farmers as the best solutions for them and increasingly as the only real option for most farmers. Two organizations vital to the development of no-till in the county were the Soil and Crop Improvement Association and the Soil Conservation Club. Many of the earliest "innovators" in the county were farmers well connected to the county Soil and Crop Improvement Association and other organizations such as the Soil Conservation Club. It was through these organizations then that many other farmers in the county developed their understanding and knowledge of no-till, who then disseminated much of their knowledge through informal networks.

It is this process which is usually referred to in the literature as "diffusion" (Rogers, 1983). However, this was not just a simple diffusion process. Certainly, these organizations were important sites in which knowledge and ideas from outside the county were introduced and disseminated to local farmers. However, it was also within this context that this external "scientific knowledge" was then reconstructed within these groups' activities as locally-produced and taken-for-granted knowledge.

This happened in various ways. The organizations began by organizing trips and tours to the U.S. and other parts of Ontario where farm operations were using no-till and other modifications (County Soil and Crop Newsletters, 1991–95). They invited researchers, experienced farmers, and government extension people to talk at meetings and specific seminars and training sessions. They then began to hold local demonstrations of no-till equipment and techniques, and organized various kinds of local crop experiments and demonstration plots involving local farmers. Most importantly in terms of transforming the scientific knowledge into personal and local knowledge, these organizations provided the local social contexts in which farmers could interact informally exchanging ideas and experiences. As one of my case studies put it:

> Now they [local farm organizations] are showing you Joe Bloe done this, and John done this, and Hank done that and you know their soils as compared to your own and a lot now even have the fertility programs listed as to what they have done in that respect. So you can say well I'm close to that and our soils are relatively close or else they are working sand and I'm working clay so this and you can … make a lot of decisions as to seed choice, fertility choice, that kind of thing, get a lot of information from other producers … it means a lot more coming from a producer I think than it does coming from somebody who is peddling a product, not necessarily saying what they are telling you as the truth but shades of truth.

In light of the importance of trial plots in convincing farmers to make the shift to no-till, it is also worth noting that many farmers got started with the trial plots through their contact with these organizations.

Given their role as key entry points for knowledge and as sites in which the external knowledge became local knowledge, certain characteristics of these groups are important to recognize. To begin with, the leaders of these organizations were all strong proponents of no-till farming and my interviews with the leadership of these groups suggested that they represented most of the first "innovators" who moved to no-till in the early 1990s. As Lighthall (1995) found in his study in the U.S. cornbelt, these farmers also tended to reflect a certain class of farmers—specifically, they were generally larger-size full-time grain farmers with 500 acres or more who were heavily capitalized and mechanized. For these farmers, especially in the context of the continuing low farm prices and production cost increases, no-till was attractive because the labour savings allowed farmers to expand their land base. As expressed in my interviews with local leaders, the deciding factors in their shift to no-till farming and, in many cases their major motivation, were the savings in labour costs and production time, and the associated prospects of increasing their scale of production. Relative to the other alternatives for addressing sustainable issues such as ridge till or organic farming, no-till was seen by these farmers not only as less risky but also as more consistent with their existing production orientation (i.e., emphasis on efficiency) and the conditions which they saw as necessary for continued profitability.

> Q. When you first started to move to no-till, can you recall why you decided to do that?
>
> A. Available labour time. That was a big issue, and cost. Just cost us a lot of money to do that fall tillage and after we were aware that there was equipment that we could handle the residues in the spring then we decided to try that out.

Within this county, a number of smaller-scale part-time farmers also began to see no-till as a means of expanding and eventually moving into full-time farming. However, these were usually the younger farmers who had the capital from their off-farm employment to invest in new no-till equipment and who had access to additional land, conditions which were missing for many younger farmers (Field Notes). For example, one of my younger case studies (30 years old) stated that he would likely move to no-till eventually but, at the moment, he did not have the resources and the land to make it possible to invest in no-till equipment.

The recognition that the farmers in these organizations were operating from a certain production orientation and structural position is a significant observation in as much as it may help to explain why no-till in particular became the dominant sustainable method promoted in this county over other possible alternatives. Indeed, to partly expand on this point, it is important to recognize that the state's promotion of certain solutions largely took place through these organizations. To begin with, the provincial extension and research people, the local County Conservation Authority, and the local federal researchers all operated principally through these organizations. Staff were assigned to work specifically with the organization executives and much of the actual organization, the writing of the local newsletters and some of the funding was provided by government officials. Also critical is the fact that the major government grant programs for promoting sustainable agricultural methods were channelled through these organizations. In the federal/provincial Soil and Water Environmental Enhancement Programme (SWEEP), for example, the Soil and Crop Improvement Association was a central contact through which local farmers were contracted to engage in the five-year research programs. SWEEP was also a programme that placed considerable emphasis on conservation tillage and no-till as solutions to the fertilizer pollution and soil erosion issues (SWEEP, 1992, 1993). The provincial Land Stewardship Programme, which included a project called Tillage 2000 which was focused on promoting conservation tillage, was another key government funding programme which was directly administered by the local Soil and Crop Improvement Association. As such, the Association became extremely important in deciding priorities and who specifically received grant money for various environmental infrastructural projects in the county (Canada, Standing Committee on Agriculture, 1991: 31).

It is interesting to note that the strategies of the local extension office and the conservation authority were intentionally non-directive and participative—farmers were encouraged to develop their own research and training programs in consultation with the extension staff. Moreover, although no-till was certainly emphasized over other alternatives (Hall, 1998b), especially as compared to organic farming which was largely absent from the government discourse, farmers were introduced to a variety of different ideas and methods for reducing soil erosion and chemical use, including low-input ridge till farming. In interviews with extension staff, this approach was presented as an intentional effort to give the local farmers "ownership" over the changes and to ensure that they could find the alternatives which worked best for them. As explained by one extension officer:

> Farmers don't like the ministry to dictate to them what they have to do ... so we've encouraged different ways of doing things, got money for various projects and trials, and make sure they were participating in this ... the local Land Stewardship committee [of farmers formed to administer the provincial stewardship grants program] grew alot in five years after it was formed—it really started to change people's views (Field Notes, Book 5, pp. 9–10).

However, it is important to keep in mind who specifically was being given ownership over the promotion of sustainable solutions in the county—it was mainly the larger "quasi-capitalist farmers" who, as Lighthall (1995) argued, were much more receptive to no-till for ideological and/or structural reasons. As such, whether or not the government planned it or not, the local discourse on sustainable farming became almost exclusively focused around no-till farming (Hall, 1998b). And eventually, even the government extension people began to be more forceful in their promotion of no-till over other methods. As one extension official lectured at a local Soil and Crop Improvement meeting:

> There's no real miracle that will give us prices that will allow us to survive growing crops. You need to access that type of tillage technology. Answers like "you can't no-till on heavy clay" … just don't hold water anymore … conservation tillage can represent a savings of $40 per acre (Carter, 1992:4).

While recognizing the important role which farmer organizations and the class structure of the farm community played in the promotion of no-till over other methods, it is also worth recognizing that the activities of the local Soil and Crop Improvement Association and the Conservation club were heavily supported by agribusiness which, as analysts have pointed out, have been significant proponents of the no-till option (Andreas, 1993; Buttell, 1993; Lighthall, 1995; Hall, 1998b). The reasons for agribusiness support for no-till over other methods such as low chemical input ridge tilling or organic farming is that no-till retains a dependency on chemical inputs and arguably intensifies that dependency (Crop Protection Institute, undated). As such, the local organizations represented important entry points for corporate-promoted ideas and information on sustainable agriculture, which as I observed in local farm meetings, were opportunities frequently used by local agribusiness representatives, especially those from the chemical industry (Field Notes, Books 4–8).

As reported by some case studies and interview respondents, membership in other kinds of farm organizations such as the Ontario Federation of Agriculture, the National Farmers Union, and the various commodity Boards (e.g., Corn Producers Association, Soybean Producers' Association) were also of some importance as sites in which ideas and information on no-till were discussed and exchanged. Most of these organizations were members of a provincial coalition formed to deal with farm environmental issues called AGCARE, which had adopted the position that conservation tillage and no-till were key solutions to soil degradation and pollution issues (AGCare, 1992). However, there was one organization, the National Farmers Union (NFU), which was not part of this organizational structure promoting no-till. Locally, the leaders of the NFU expressed more doubt about the emphasis on no-till as a solution, and indeed, were the ones who tended to express the view that no-till was the "chemical companies' solution" (National Farmers Union, 1990).

The way in which the organization played a role here was again quite similar to the role played by the other organizations. As one farmer described his early introduction to organic farming:

> We went on an organic tour—a dairy farmer. We went through the farmers' union—we got together, there were maybe three others who felt like we did and wanted to investigate more—he showed us his fields and he said this is the honest truth, this is the way I farm. If I'd met him at the coffee shop I'd say he was the biggest bullshitter … but after talking to him spending time with him on his farm I knew he wasn't lying (Case Study Interview).

However, although it had gained some strength during the 1980 farm crisis, the NFU was quite marginalized in Ontario by the 1990s, and as such, its influence on the sustainability discourse among farmers generally in the county was quite limited.

The Influence of Informal Social Networks

As reported in interviews and as observed during field work, the informal networks of the case study farmers were also extremely significant in developing farmer knowledge and positions on no-till vs. other options. Although a few farmers saw themselves as leading the process of change and, in that sense, did not privilege the knowledge and experience of other local farmers as important, most of my case studies placed considerable weight on their observations of and discussions with their farm neighbours, coffee shop mates, family members, and friends. Each knew certain farmers who they saw as "good" farmers whom they respected. Even if they were not closely connected personally to these farmers, and the networks of the farmers did vary significantly in terms of size and depth, they all paid close attention to what those farmers were doing, often by observing their fields on a regular basis. While some were hesitant to seek others out directly to ask about their use of no-till, a number reported using opportunities at church, community functions, chance encounters in town, etc., for this purpose. I also observed a number of informal visits to neighbour farms or chance encounters at farm supply stores which took place between farmers during my case study research, where farmers exchanged information often related to chemicals, seeds or any innovations they were using. It was standard for the topic of their no-till fields to come up in the conversation. And, as noted above, most farmers reported using farm meetings (marketing boards, OFA or NFU meetings), government seminars, and farm shows for this purpose.

What was also very clear in many of the case studies was strong concern that they had about what other farmers thought of them. As one stated, "No one likes to admit it but we all worry about what the other guy thinks of you—farmers are like that" (Case Study Interview). While how much of a role this concern played is hard to determine, some farmers talked about the adoption or rejection of no-till in ways which suggested that social standing or status in the community was a pressure which they felt when making their decision. For some that pressure was expressed as a felt need to keep up with new developments in farming—to avoid being "left behind" or being characterized as "old fashioned." For others, the pressure worked the other way—a concern that no till would make a mess of their fields and undermine their status as "good farmers" who have "clean fields."

The Influence of Kin and Extended Family

Kin relations were frequently cited by farmers as playing a particularly important role in their decisions, yet this point is rarely raised in the literature (Feldman and Welsh, 1995). Five of my case studies involved father-son partnerships, where sons were either working their fathers' land or jointly working on land owned separately. In four of these cases, the sons were the main advocates of the shift to no-till and were instrumental in convincing their fathers (and in one case, an uncle and brother) to adopt no-till. In this context, they had to persuade the fathers and show that the new method would work, and they had to negotiate the conditions in which the father would then cooperate. In two cases in particular, this meant contending with considerable resistance and challenging the opposing ideas and knowledge of the fathers. Moreover, the problem did not go away with the initial agreement to use no-till or make some other modifications. Each subsequent stage of the process of making the shift often involved new tensions and negotiations, and any "problems" such as reduced yields or new weed problems had to be explained. In one case, this also meant that the shift to sustainable farming practices was moving at a much slower pace than the son wanted. On the other hand, in two other cases, the father and sons reported that they came to a fairly quick agreement and commitment to no-till with relatively little conflict.

In one other situation, the father was the main advocate and the son, who was relatively new to farming full time, was viewed by the father more as an important sounding-board. In this latter case, the father owned all the land and saw the decisions as his to make. Nevertheless, even in this case, there was an understanding that there was room for persuasion and mutual agreement. As the father put it: "Actually the last couple of years I discussed probably with [name of son] more than with [name of spouse]. He's the one that is going to have to do the major portion of the work along with me, so..." As I observed over the course of the field work, the father also made an effort to draw his son into the formal network of farmers involved in no-till by bringing him to meetings and demonstrations.

There was also a case of two brothers who had not been able to come to an agreement. The brothers, who had been farming their land together, went their separate ways as a consequence of their disagreement over using no-till. However, tension over how to farm the common family land which they were farming for their retired parents remained an issue of dispute.

The Influence of Household and Gender Relations

In six of my case studies, the male farmers did not mention their spouses when initially describing their decisions to make changes in farming practices and equipment. However, when asked explicitly about their spouse's input on these decisions, all acknowledged that they had at least discussed the decision with their spouse. However, unlike the father-son relations, most of these male farmers did not express the view that they had to "negotiate" with their spouses over farm decisions like the shift to no-till. As two stated: "It's my decision. Well we discuss it … usually the answer I get is whatever I want … so. I might say something [to her] but I make those decisions."

In four of these five cases, the spouses were working in full-time off-farm jobs and in all five cases, they reported relatively little involvement in on-farm production activities at that point in time. This included no major role in the farm financial planning and bookkeeping. Each female spouse had been more active several years before, and three of the five were still involved occasionally in picking up supplies and running meals to the fields. When I asked these female spouses whether they were involved in decisions like the shift to no-till farming, all five agreed that they saw these as their husbands' decisions. Moreover, they tended to explain this as reflecting their lack of knowledge to take a strong position—that is, they did not see themselves as having a legitimate say in an issue such as the switch to no-till because they were not active enough in the farming to know whether or not it was a good idea.

> As we got more land, I was more involved initially and we talked a lot more about the decisions. Now I don't do as much anymore. Our son is working with him and they talk a lot. We don't talk as much about farm decisions—it just kind of happened that way and I accepted it. I don't know that I know enough now to say much...

However, these spouses also had a certain conventional understanding of farming as a business that played a critical role in how they viewed their input into farm decisions. As one put it: "I play very little role in farm decisions—farming is a business, it has to be managed like a business. [Name of male spouse] is the one who manages the farm, not me." Another put it in a remarkably similar way: "This farm is ours—we both own it, but it's a business and those are management decisions and [male spouse's name] manages the farm." On the other hand, this did not mean that they did not have an opinion or at least had some questions which they posed to their husbands. As noted, all the women had reported some "farm" activities and a period of time in the past when they were more active, and at least three felt that this gave them at least some knowledge with which to express a view. They also all reported that "farm talk" was an important part of the relationship with their spouses and so they "knew" things in this way as well, and often saw themselves as having a role to play in posing questions and suggesting certain things as part of this process: "I walk the fields with him sometimes and we talk then. I can see what he's talking about, ask questions, things like that."

In short, while they did not challenge the idea that it was their husbands' decision to make because he was still seen by them as the "manager," this did not mean that they viewed themselves as unable to contribute. Moreover, while none of the male farmers in this group would acknowledge (or at least they expressed no awareness of) a change in their no-till decision based on their discussions with their wives, two did express the view that their discussions made them feel either more secure in their decisions, which was often their motivation in talking with them, or had encouraged them to "think some more."

The next point to recognize here is that not all the women with off-farm jobs were inactive on the farm and in farm decisions. Moreover, not all the women were involved in full-time off-farm jobs, although all but two had some off-farm work. Whether working off-farm or not, what seemed to be particularly important in differentiating the involvement of the female spouses in the decision making was the extent to which the females were involved in the farm operations. In the four cases, where the women were much more actively involved in farm activities, they were also much more actively involved in farm decision-making more generally (Shaver, 1990). In these contexts, the decision to adopt or reject no-till or to adopt other changes in their farming methods were understood by both husband and wife as joint decisions. As one female farmer put it in the presence of her spouse: "We talk about it, we'll discuss it and come to an agreement—like there is hardly ever a time where we don't ask each other, 'Well what do you think?'" On the other hand, it is worth noting that even in these cases where women are very active in the operation and in the decision-making, all the women report some insecurity in their knowledge and a tendency to defer to their husband's judgement more often than not. For example, when asked who initiates suggestions about making changes in their farming practices or equipment, the same women quoted above responded:

> A. Most of the time he'll come up with an idea and we'll talk about it. In that way, I have to trust him because I feel he has more experience and background knowledge… Like there is a part of me that doesn't feel that secure because I wasn't raised on a farm. Even though I've been here for a long time I have to trust his judgement on different things…
>
> Q. In this situation, what do you see as your role in the decision making?

> A. Just to support him and encourage him. After he explains the pros and cons and I can see what he's getting at, I say okay let's get that … it turned out to be a good decision.

In one case where a spouse was working full time, the greater involvement of the spouse in the decision making was understood as reflecting the contribution of her off-farm income to the farm operation. As both spouses explained, this contribution gave her the clear right to be involved in major decisions and it was up to the husband to explain the decisions sufficiently to allow the wife to agree or disagree. In the other cases, where full-time off-farm spouses reported limited involvement in decision making, the farm was seen as a self-sufficient business operating separately from the household:

> Farming is a way of living. I heard it said that farming is a way of life. It's true, farming is a way of life, so is manufacturing cars and lot of other things. It's a business and it better be run as a business. Obviously if you don't run it as a business then eventually you are going to get caught up … dealing with banks … with suppliers. The idea is that it is a family farm. Yeah, it's a family that lives on the farm and chances are that they are all involved in it … but that's [still] a business—it's not like it used to be 50 years ago when you could go out and gather your eggs and you had pigs and cattle and what have you and you didn't have to go shopping for too much off the farm if you chose not too. Those days are gone.

It is interesting to note that among the five farm case studies that had adopted alternative practices other than or in addition to no-till, that is, those using organic or low chemical input practices, both the male and female farmers expressed strong concerns about health issues and it was the mutual support of this concern which they cited as very important in their decision to stay away from no-till (because of its greater dependency on chemicals). However, a concern was expressed in two of these cases that the problem with no till was not just that it ignored the chemical problem—it was also seen as representing the "business or corporate approach to farming" which they were trying to avoid. As such, the promotion of no-till represented for them much more than just a method which allowed the chemical companies to continue to sell chemicals—it was another way of "killing a way of life" which they were trying to develop in adopting organic farming methods—that is the difference between seeing farming as a smaller joint or family operation vs. the larger-scale mechanized farming, which as the women often noted, usually reduces the need for the female's labour.

As a final observation, I should point out that while there was no indication that the female farmers were more likely than the male farmers to express concerns about the environment and chemical pollution (*see also* Blocker and Eckberg, 1989), there was a marked difference between those spouses who were actively involved in the farm operation as opposed to those who were not. Those who were involved tended to express much stronger concerns about the immediate environmental and health hazards involved in the use of chemicals in their own operations or by their neighbours. And in two of these cases, the male farmers clearly felt that it was partly due to the strong feelings of their spouses that they began to reduce their use of pesticides and sustained their commitment to organic farming. As one recounted:

> I remember one time when I was helping him on the tractor spraying. I could remember following him and I was sick, I could smell the stuff, it was so terrible, I was getting it all over me and I said I'm not going to do this anymore. It scared me. So I guess I was

> pushing him all the time—he didn't really like it, but I just kept saying this isn't right [using chemicals].

As her spouse said in his interview, "sometimes I get discouraged but she [his spouse] talks to me, reminds me."

While there are clearly important differences among the case studies in the roles which female farmers play in the decision making, the key point here is that the household is a very important site for the construction of knowledge and ideas which form the basis of farmers' decisions. Moreover, as Feldman and Welsh (1995) have argued, the structure of gender relations in farm household, specifically the involvement of women in off-farm or on-farm labour, makes an important difference in the way farm-related decisions are made. Again, it is important to reiterate that, in all cases, the women saw themselves as having some influence over farm decisions, more so if the decisions were seen as relating to issues where they judged themselves as having some existing knowledge. Health issues, whether for the family or their husbands, were especially strong issues which they expressed some knowledge and concern. Indeed, the spouses in four of my case studies were nurses, and three of those expressed concern about the use of chemicals and reported that they advocated and supported any decisions by their husbands to reduce chemical use. Yet, the influence which spouses exercised over decisions, and indeed, the influence that the female spouses felt they should exercise, seemed to hinge quite substantially on their everyday participation in the work and management of the farm, not on whether there was joint ownership (Lobao and Meyer, 1995; Feldman and Welsh, 1995; Meares, 1997).

It should also be stressed that with few exceptions, the women in the no-till and conventional tillage farms were largely absent from the formal farm organization networks. Some women attended some of the farm tours but did not go to the monthly meetings, equipment shows and training seminars. This further reinforced the idea that farm knowledge was substantially the domain of the male farmer, putting the males in stronger positions when it came time to make decisions. However, in three of the four organic farms, the women were much more active at the organizational level both reflecting and shaping their stronger roles in farm decision making (*see also* Hall, 1998a).

Conclusion

This paper points to the value of looking at the development of sustainable agricultural practices among farmers as a process of knowledge construction which is imbedded in a number of structured social contexts, with particular reference to the farm production context, the community, the extended family, and the household. In taking this approach, we have tried to show that class, gender and kinship relations are vital to the way decisions are shaped and made.

The findings emphasize the critical role of local farm organizations in creating a discourse on sustainability that focused on no-till over other alternatives, setting into motion a localized process of farmer experimentation and exchange of "information." This process of "seeing for themselves" and "talking among themselves" about the outcomes was crucial in validating that the method worked for them—and that it fit into their conception of the productive, successful farm. A central point to make here is that a vast majority of the farmers making the transition to no-till farming were "conventional farmers" in the sense that Beus and Dunlap (1991) define the "conventional paradigm" of agriculture. For them, farming was a business and no-till was potentially a very useful method for enhancing the productivity and efficiency of their farm. Certainly, a number were concerned about soil conservation and the environment, but those considerations were secondary. As such, the main proof they were seeking was evidence that it was productive and cost-effective.

Another key argument emerging from this study is that the process of personalizing and localizing the knowledge was aided substantially by the explicit efforts of the state and agribusiness to "empower" the local farm leadership. This was done by directly funding the operations of certain farm organizations and by giving those organizations the responsibility and authority to administer funding programs for farmers. While an argument can be made that both the state and agribusiness were interested in pushing conservation tillage over other alternatives such as organic farming (Hall, 1998b; MacRae, Henning and Hill, 1993), a central conclusion of this paper is that certain kinds of farmers, in particular the larger-scale, more capitalized farmers, tend to dominate these organizations, and it was those farmers who shaped the focus on no-till over other options. Moreover, this creation of an image of self-control and local responsibility for sustainability was critical in convincing farmers that they were creating their own knowledge rather than simply adopting the outside knowledge of the experts. In short, the analysis suggests that class interests and ideology tended to shape close ties between conventional farm organizations and agribusiness in the development of an institutionalized, sustainable discourse which increasingly emphasized with one voice the value of no-till farming over more radical changes such as organic or low-input farming.

Finally, the paper demonstrates the importance of gender and kin relations in knowledge construction and decision making. While the evidence considered here suggests that the final decisions were primarily made by the males on most of these farms, it was also shown that the women influence the process in complex and sometimes subtle ways. In some cases, this influence is exercised through the role that women often played as sounding boards, in others women were more actively involved in discussions aimed at making a decision. At the same time, the evidence suggests that the exclusion of women from the farm labour process, fuelled in part by the pressures on women to earn off-farm income, has played a role in undermining women's capacity to forcefully push their point of view, precisely because they don't believe they have sufficient knowledge to judge. Nevertheless, they often use what they know personally about the environment and about farming to make a contribution to the household discussion, and for some male farmers at least, this contribution has an impact on their thinking.

More broadly in terms of gender relations, this paper was aimed at showing that although the individual male farm owners usually dominate in making these decisions in conventional farm operations, we need to move beyond the assumption that we can fully understand their decisions by making them the centre of the universe. While this analysis still lacks the complete decentering of the male farmer that is needed to really look at decision making as a class or gendered process, it certainly suggests that we need to work more diligently towards that goal.

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SECTION 7

GLOBALIZATION AND THE STATE

Globalization, Economic Development and Canadian Agricultural Policy

Murray Knuttila

Rural Saskatchewan is in crisis. The manifestations of the crises are legion and well known, including declining farm numbers, increasing farm sizes, struggling and disappearing communities, the loss of many rural services, and elevated levels of personal stress with an affiliated high number of suicides. An important issue that emerges as we struggle to come to grips with the ongoing transformation of rural Saskatchewan is the role and response of the federal state. Can those of us who are interested in contesting the trends that seem to be eroding our rural communities and way of life count on the federal government to act as an ally? In the past, economic and social crises have often resulted in producers and others convincing national governments to change policies or intervene in other ways such as providing relief and emergency assistance programs; however government responses to the current crisis are more and more characterised by a common refrain that goes something like: "We are part of a highly competitive global economy and need to restructure in order make ourselves more efficient and better able to compete."

If we are to fully understand the nature, dimensions, and government responses to the current crisis it is clear that we need to understand the larger structural context of what is happening. Vernon Fowke's suggestion that the best way to understand the development and fate of agriculture in an industrial society is to place it within the larger context of industrial development still has merit (Fowke, 1946). This paper represents a preliminary effort, albeit at a high level of abstraction, to outline the broad contours of the relationship of the agricultural sector and the larger national economy.[1] The paper argues that in order to understand the current status of the agricultural sector in Western Canada we must place it within the context of the national economy, and further, in order to understand the overall dynamics of the national economy we must locate it within the larger structures of global capitalism. The brush used here is broad and the picture anything but nuanced, subtle or complete.

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[1] Portions of the arguments contained herein were first presented at the annual meetings of the Canadian Sociology and Anthropology Association in 1994 in Calgary and 1995 in Montreal. Some of these arguments appear in my chapter "From the National Policy to Continentalism and Globalization: The Shifting Context of Canadian Agricultural Policy" in Jane Adams, ed., *Fighting for the Farm: Rural America Transformed*. Philadelphia: University of California Press, 2003.

The initial section of the paper attempts to provide a framework for understanding the various stages in the development of capitalism as a world system. While the route may seem needlessly convoluted and abstract, we must be clear about the nature of the larger system if we are to fully understand the current situation. The overview of the development of the capitalist world system provides a backdrop for a consideration of the development and evolution of the Canadian economy, which in turn is the context within which we can begin to understand the responses of the federal government to the current crisis in rural Saskatchewan.

The Unfolding Capitalist World System

Authors as diverse as Adam Smith, Karl Marx, Immanuel Wallerstein, W.W. Rostow, Karl Polanyi, and Eric Wolf agree about one characteristic of the capitalist system—it is a world system. Given this fact, I will simply adopt, without debate and further justification, the position that in order to understand the Canadian economy we must understand the dynamics, changes, and processes of the world capitalist system.

The Canadian philosopher and theologian, George Grant, summarised the essence of the capitalist system in the following manner: "Capitalism is, after all, a way of life based on the principle that the most important activity is profit-making" (1965, 47). In a recent essay, "The Drive for Capital," Robert Heilbroner (1992) uses the phrase "the rage for accumulation" (32) to describe the inner logic of the system, noting that the ceaseless accumulation that drives the system is the central dynamic that leads to the continual changes that characterise capitalism:

> Capital thus differs from wealth in its intrinsically dynamic character, continually changing its form from commodity into money and then back again in an endless metamorphosis that already makes clear its integral connection with the changeful nature of capitalism itself (30).

Thinkers such as E.K. Hunt (1990), Broadus Mitchell (1967), Paul Baran and Paul Sweezy (1966), S.B. Clough and C.W. Cole (1967), and Robert Heilbroner (1968) argue that capitalism has passed though a series of distinct phases or stages, each marked by different forms and levels of technical development and different social relations of production. Although there are variations among the schemas employed by these writers, the following represents a periodization schema distilled from their writings:

+/-1500–1770s	Mercantilism or Merchant Capitalism
+/-1770s–+/-1860s	Industrial Capitalism
+/-1860s–1930s	Corporate Capitalism
+/-1930s–1970s	Keynesian State Corporate Capitalism
1970s–Present	Neo-Liberal Corporate Capitalism

Clough and Cole (1967) use the term mercantilism to describe the initial phase of modern capitalism, although the term merchant capitalism is also appropriate since trade and commerce were the central processes though which capital was accumulated. The era witnessed the rise of nation states across Western Europe via a union of merchants and monarchs. During the mercantilist era colonies were important for both merchants and the monarchs because they were a source of wealth and power. As a result of this, the era of mercantilism was one of feverish colonialism during which various European powers explored and invaded virtually every part of the globe. The successful capital accumulation that characterised the mercantilist era produced the conditions that gave rise to its transformation into the next stage of capitalist development. It is generally recognised that some time between the 1750s and the end of the century a revolution occurred that transformed, along with virtually everything else, the class structure, conceptions of wealth, the manner by which wealth was produced and appropriated, and the role and importance of colonies.

The industrial revolution, which ushered in the second stage of capitalist development, brought further radical changes as factory-based mechanised production came to dominate wealth creation. The new technologies and ways of organising production resulted in productivity and output increases that would have been unimaginable just 50 years prior. The initial impact of the industrial revolution on colonies such as Australia and British North America was a temporary loss of interest in colonial empires. Thomas and Hamm (1947) point out that, for a variety of reasons, during the 50 years following the Napoleonic wars "there was little interest in colonies" (566).

Among the changes that this new attitude toward colonies brought was the British decision to grant some degree of responsible government. Other changes that had an impact on the colonies were the movement toward worldwide freer trade as a result of the repeal of the Corn Laws, and the easing of other mercantile regulations. Such developments within Britain, which were essentially about providing "cheap food" for industrial workers, signalled the political ascendancy of industrial interests. For colonies such as Canada these developments meant that local merchants, small-scale industrialists, and other entrepreneurs experienced a period during which they had more "room" to develop local or national capital accumulation strategies.

In his discussion of the development and dynamics of this first period of industrial capitalism, E.K. Hunt points out that this "classical" phase of industrial capitalism was relatively short lived. He writes "The period from the mid-1840s to 1872 ... has been called the golden age of competitive capitalism," however he goes on to point out that it was a short-lived era:

> Just as competitive capitalism seemed to be achieving its greatest successes, the forces Marx had predicted would lead to the concentration of capital began to show themselves. Improvements in technology were such that larger-sized plants were necessary to take advantage of the more efficient methods of production. Competition became so aggressive and destructive that small competitors were eliminated. Large competitors, facing mutual destruction, often combined themselves in cartels, trusts, or mergers in order to ensure their mutual survival. In the United States the competition was particularly intense (98–99).

Heilbroner (1968) makes a similar point when he notes that: "A system originally characterised by large numbers of small enterprises was starting to give way to one in which production was increasingly concentrated in the hands of a relatively few, very big and very powerful business units" (109). Clough and Cole also describe this process as one that "was definitely away from individual ownership to corporate ownership..." (1967: 639). Numerous scholars have argued that we can date the emergence of the modern corporation from the post-Civil War period (Baran and Sweezy, 218; Mitchell, 155; Heilbroner, 109). E.K. Hunt agrees, commenting on the important changes that occurred during this period:

> During the late nineteenth and early twentieth centuries, capitalism underwent an important and fundamental transformation. Although the foundations of the system—the laws of private property, the basic class structure, and the processes of commodity production and allocation through the market—remained unchanged, the process of capital accumulation became institutionalised in the large corporation (121).

Most scholars acknowledge that the emergence of the modern corporation transformed the capitalist system and brought forth a series of new tendencies and dynamics. The large scale production made possible by the concentration and centralisation of capital soon encountered obstacles of its own making as raw material supplies began to decline. In addition, the productivity of the modern corporation soon meant that domestic and local markets became saturated, and as a result profitable local or domestic investment outlets became harder and harder to find, especially in more industrialised nations such as Britain and the United States. Hunt further notes that this change in the basic structures of the accumulation process which saw "the accumulation process rationalised, regularised, and institutionalised in the form of the large corporation" was accompanied by a further important change, namely "the internationalisation of capital" (121).

These changes to the structures and dynamics of capitalism lead to the emergence of what is commonly referred to as the age of the "New Imperialism." The geographical expansion associated with the new imperialism differed from mercantile colonialism in that it involved an unprecedented internationalisation of capital as the corporations competed on a global scale for raw materials, markets, and investment outlets. Clough and Cole agree, in noting that after about 1875 a number of factors produced a renewed interest in colonial expansion:

> There was a need for new markets to absorb the goods produced by Europe's ever expanding productive equipment. There was a need for raw materials to satisfy the maws of European industry and of foodstuffs to feed Europe's ever growing population. There was a need, so it was believed, for places to invest capital where the return would be high and the danger of default for political reasons would be slight. And there was thought to be a need for colonies to relieve the pressure of population—of overpopulation—in Europe (618).

Thomas and Hamm summarise the characteristics of the new imperialism: "These, then—markets for manufacturers, sources of raw materials, above all, places for investment of surplus capital—are the main reason for imperialism" (571).

The internationalisation of capital and the global competition for raw materials, markets, and investment outlets were key factors leading to World War I. The War proved to be a turning point in global relations marking the beginning of the end for the British Empire, and the emergence of the United States as the hegemonic world economic and military power. Despite the unimaginable tragedy of the War, Western Europe and North America experienced prosperity and economic growth throughout the first three decades of the twentieth century. Indeed it is possible to argue that the boom period from the turn of the century to the Great Depression was a kind of golden age of corporate capitalism, although some scholars such as Baran and Sweezy maintain that this prosperity was based on a series of unique historical contingencies. In any event, in 1929 the system suffered a nearly total collapse as the international capitalist system entered a severe worldwide crisis.

The Depression wrought many changes, however perhaps none was as important as the revolution in economic theory and the role of the state. The Keynesian revolution ushered in a new era of capitalism in which there was widespread acceptance of the notion that during periods of crisis state intervention in the economy is both legitimate and essential. Government expenditures as a means of increasing aggregate demand was coupled with increased government regulation designed to smooth out some of the contradictions and excesses of the market, producing what Heilbroner refers to as "guided capitalism." The potential impact of government expenditures on the economy was demonstrated by the fact that the Depression ended and was replaced by prosperity as a result of massive state spending associated with the preparation for, and the conduct of, World War II. Students of history use various terms such as "warfare economy" and the "military industrial complex" to describe the new institutional structures and economic arrangements that characterise the intimate relationship that developed between large industry and the state.

The eventual Allied victory did not bring an end to government economic intervention, as the Marshall Plan and the related Brett Woods Conference established a framework for sustained government expenditures geared to rebuilding shattered economies and keeping them firmly within the capitalist fold. The bulk of the financial and other resources used in the massive post-war rebuilding process originated in the United States, now the unchallenged leader of the capitalist world. The outbreak of the Korean War, the emergence of the Cold War, the massive expenditures necessary to provide an infrastructure for the post-War baby boom, the spread of suburbia, and the developing space race all contributed to two decades of prosperity, albeit one that was predicated on high levels of government spending and an associated growth in government deficits.

Just as there was something in the logic of the system of competitive capitalism that led to its transformation to corporate capitalism, so too it can be argued that the logic of the era I am calling Keynesian corporate/state capitalism contained the seeds of its own transformation. By the end of the 1960s the success of the Marshall Plan began to create problems and tensions in the international market as western European and Japanese corporations started to challenge the traditional markets of American-based multinationals. Added to this were the problems associated with growing government debts, debts to be sure which had in large part been incurred as a result of spending in areas that directly benefited the corporate sectors as in the expansion of the military and the space race. Other international events such as the emergence of OPEC accentuated the instability of the international system until by the 1970s another crisis loomed.

The growing international competition, which accompanied the fiscal crisis of the state in many western nations, gave rise to a sustained and well-articulated critique of Keynesian economics and the state practices that have sustained the system since the Great Depression. The popularisation of supply-side and monetarist economics and governments committed to state cutbacks under the banner of neo-conservative (which are actually neo-liberal) philosophies ushered in a new era of capitalist development.

The rhetoric of deregulation, fiscal responsibility, and freeing the market from the fetters and burdens of government intervention and interference began to dominate the actions and policies of more and more governments. As governments undertook massive withdrawals from previous responsibilities and initiatives, they also faced restrictions and limitations on their actions as a result of the terms and conditions of international agreements such as GATT and the ongoing authority and power of agencies such as the International Monetary Fund. The power of nation states and capital with a regional or national base paled in the face of global capital supported by transnational "international" accords. The accumulation strategies and plans of giant multinational corporations became increasingly based on calculations concerning inputs, labour supplies, and markets that are truly global in scope.

Even these cursory comments make it clear that capitalism has indeed passed through a series of distinctive stages or epochs as it evolved and changed. Throughout these various stages of development the inner logic or *raison d'être* of the capitalist system has remained unchanged—the system is driven by the pre-eminent drive of capital to accumulate. While the goal of capital has remained constant, its precise form and structure have changed as a result of the unmistakable tendency toward the concentration, centralisation, and internationalisation of capital.

The issue that we must now confront is how these changes to the structures of and organisation of capital and processes of capital accumulation on the world scale affected the development of the Canadian economy.

Canada and the World System

At the risk of being Eurocentric and simplifying a complex historical continuum by arbitrarily cutting into the process, we will begin our overview of key aspects of Canadian economic development at about the same time that the Industrial Revolution was beginning in Britain. Our point of departure is the British military conquest of New France. It is somewhat ironic that the British conquest of New France in 1759 occurred at a time when the obsession with colonies characteristic of the mercantile era was ending. Although colonies were not deemed essential to wealth creation during the initial stages of the Industrial Revolution, North America provided opportunities for British investors and merchants to develop new staples. In Canada, timber, lumber, and agricultural products joined the fishery and the declining fur trade. The continuing excess population that troubled some British politicians provided a continual stream of immigrants, and as a result British North America experienced sustained population growth after the Conquest. The emergence of villages and towns complete with small craft producers, artisans, and local merchants led to the emergence of new classes, including the germ of what was to become an indigenous industrial middle class. Unsuccessful rebellions in 1837–38 resulted in the creation of a united colony on the St. Lawrence. The 1840s and 1850s were decades of economic growth as the colonial government poured money into enhancing the canal and railroads systems. As Ryerson (1973) convincingly argues, the industrialisation of the 1840s and 1850s was crucial for the subsequent development of the Canadian ruling class.

By the 1860s the boom period was ending and this, plus other problems, produced a proposal to restructure the existing colonies of British North America into the new nation of Canada. Among the problems that precipitated the movement to Confederation was the desire among both merchants and industrialists to expand the boundaries of the colony of Canada to incorporate western Canada, a region that was viewed as a potential expanding market for industrial goods and a source of export cash crops.

Immediately after Confederation the government of Canada embarked on a program of national expansion, quickly establishing its presence from sea to sea. Though temporarily side-tracked by scandal, the government of Sir John A. Macdonald took action in the late 1870s to systematically facilitate industrial development in Canada via the famous national policy. For a variety of national and international reasons the national policy did not really come to fruition until after the turn of the twentieth century. As we know, by this time capitalism, especially in Britain and the United States, entered the corporate era and the multinational corporations were now the major economic actors. It is significant that multinationals emerged just as Canada embarked on its most significant period of industrial development and economic expansion.

The period from the turn of the century to the Great Depression marks one of the most rapid and sustained periods of economic development in Canadian history. In essence the national policy worked to a tee, as the farmers filling the Prairies served as a tariff-protected expanding market for Canadian industry while producing export cash crops and making profitable demands on the Canadian banking industry. In addition, by the 1920s a new sector of the Canadian economy was opening with the exploitation of new Canadian resources such as pulp and paper, minerals, and hydroelectric power. Though American based multinationals were responsible for a significant proportion of the investment, no one expressed much concern because investment equalled growth and development, and the expressed purpose of the national policy was growth and development.

The three-decade-long boom came to a crashing halt as the Great Depression destroyed markets for many Canadian products. The coincidental catastrophic drought in the West literally drove farmers to the brink of starvation. Social discontent and the threat it posed to the system drove governments to adopt Keynesian policies and actions, but more than anything it was state spending that accompanied the preparation for and conduct of the War that ended the Depression in Canada. A central impact of the War effort on the Canadian economy was the significant role that the government came to play. As a result of the War effort, much Canadian industrial production involved co-ordinated and co-operative ventures with American companies. By the end of the War many Canadian companies realised that such arrangements were advantageous, and in the aftermath of the War many Canadian companies sought to retain the benefits of continental integration.

The development of a continental economic philosophy is not surprising because it is fully in keeping with the logic of capital. George Grant puts it in these words:

> after 1940 it was not in the interests of the economically powerful to be nationalists. Most of them made more money by being representatives of American capitalism and setting up branch plants. No class in Canada more welcomed the American managers than the established wealthy of Montreal and Toronto, who had once seen themselves the pillars of Canada. Nor should this be surprising. Capitalism is, after all, a way of life based on the principle that the most important activity is profit making. That activity led the wealthy in the direction of continentalism (47).

Whether we can attribute the post-War boom in Canada to the decision of the Canadian ruling class to adopt a continentalist economic strategy is not clear, but one thing is certain—Canada also experienced a post-War boom. The decades of the 1950s and 1960s were marked by significant periods of economic expansion, population growth, and growing government debts. The cumulative impact of decades of deficit spending on levels of national debt began to become apparent by the end of the 1960s. One might say that the "Keynesian chickens" began to come home to roost, and by the 1970s the federal government, and many provincial governments, were well on their way to a fiscal crisis. By the 1980s the catchwords for the Canadian economy were becoming *globalisation* and *restructuring*. Amid the worst recession since the Great Depression, Canadian governments succumbed to the deficit hysteria that accompanied the apparent debt and deficit crisis by accepting the "logic" of neo-liberal economics. Governments undertook massive spending and program cuts, adopted high interest rate policies, and engaged in a sustained ideological campaign to convince the population that this bitter medicine really was in everyone's interests.

The Evolution of Canadian Agricultural Policy

At last we come to agricultural policy and the crisis in Saskatchewan. The material above is intended to provide the backdrop necessary in order to understand the present crisis and the responses of federal governments. In what follows I will examine the development and evolution of federal agricultural policy in order to explain the responses of federal governments to the present crisis. For analytical purposes I will divide Canadian agricultural policy into three overall phases or stages. During the first phase, lasting from Confederation to the Great Depression, federal governments adopted a series of policies and undertook a number of measures to facilitate the establishment of an agricultural region in Western Canada. Simply put, the focus of agricultural policy between 1867 and 1930 was on the establishment and maintenance of an agricultural population on the Prairies. The second phase of agricultural policy encompasses the eras of Great Depression, World War II, and post-War boom. During this period the orientation of federal agricultural policies was toward managing crises and maintaining the structures and institutions that had been established in the formative period. Assisted by the significant benefits of hindsight, we can now see that the 1960s marked the beginning of the third period of agricultural policy. The economic difficulties that many producers were beginning to experience during that decade prompted the establishment of the now famous Task Force on Agriculture in April 1967. The 1970 report of the Task Force, *Canadian Agriculture in the Seventies*, was a watershed document pointing to a new understanding of the role of agriculture in the Canadian economy and the third era in agricultural policy.

Phase One: Establishment and Expansion

The central role that the West, and its predominately agricultural population, was designated to play in the industrial development strategy known as the national policy is well know and documented and need not be restated here (Fowke, 1957; Conway, 1994). As I noted above, the national policy is best understood as a series of policies and measures designed to facilitate industrial development via a tariff-protected domestic industry and the creation of an expanding market by way of the settlement of the West with a population of independent agrarian commodity producers, or if your prefer, agrarian petite bourgeois producers. The agrarian petite bourgeoisie was to serve a dual role as consumers of Canadian-produced manufactured products and producers of export cash crops. All fractions of capital benefited from western settlement as those engaged in manufacturing had an expanding market, while those with capital invested in transportation, the financial sector and the export trade also prospered.

In addition to the triumvirate of actual policies that made up Macdonald's national policy (tariffs, western settlement and the construction of a transcontinental railroad), federal governments enacted other measures to facilitate the establishment of the wheat economy. These actions included the establishment of a system of experimental farms to facilitate research into new varieties of cereal grains, systematic and ongoing investigations and regulation of the activities and operation of the grain trade, government support for various co-operative ventures, government-owned terminal elevators, and, when needed, active government intervention in the marketing of wheat. It is clear that key decision-makers in the state throughout the entire period subscribed to the viewpoint of the minister of agriculture who in 1886 stated: "There is no industry in which we are all so deeply interested as that of agriculture, and we feel that everything which can be done for the farmers should be done by the Parliament" (House of Commons, *Debates*, April 30, 1886: 962). And thus with the active support and assistance of the federal state the Prairies were populated by hundreds of thousands of family farms typically producing a mixture of cereal grain cash crops and various types of livestock mainly for the market, but also for home consumption. Between the turn of the century and the Great Depression the massive population influx onto the Prairies gave rise to the hundreds of villages and towns that dominated the landscape. Rural communities flourished most with a wide array of institutional services from schools to churches to community halls and clubs. It was, one might romantically say, the "best of times" on the Prairies.

Phase Two: Crisis Management and Maintenance

The 30-year period of significant, albeit with minor interruptions, expansion came to a relatively abrupt halt with the onset of the Great Depression. Even if the capitalist system had not collapsed on an unprecedented international scale, Canadian development would have slowed because the physical limitations of western expansion were reached. The *Rowell/Sirois Report* noted that by the end of the 1920s a new era was dawning:

> The policies of all-Canadian transportation and western settlement had been brought to fruition... . During the period of the consummation of Dominion status and the securing of a measure of international recognition brought the principal external policies of the country to a successful conclusion. The Dominion had completed the concrete, positive tasks, which the Fathers had set it to do, and no new national objectives emerged to unite people behind federal leadership (150–51).

In terms of agricultural policy, the severity of the crisis and the overall threat that it represented to the entire social, economic and political system forced the federal government into some immediate actions. The establishment of the Turgeon Grain Inquiry Commission, the creation of a permanent wheat board, the 1939 Grain Futures Act and the regulation of the activities of the Winnipeg Grain Exchange by the Board of Grain Commissioners were all indicative of the consensus that government action was required in order to save the entire system from collapse. In addition to the problems caused by the Depression, a major drought ravaged the West and this brought on further government interventions in the form of the Prairie Farm Rehabilitation Act (1935) and the Prairie Farm Assistance Act (1939). Even after the end of the Depression and the War that facilitated the end of the depression, federal governments continued to attempt to stabilise and maintain agricultural production and prices though a series of legislative initiatives including amendments to the Wheat Board, the negations regarding international agreements, and measures such as the Farm Improvements Loan Act of 1944, the 1959 Crop Insurance Act, and the establishment of the Farm Credit Corporation and the Agricultural Rehabilitation and Development Act. In spite of the fact that agricultural policy in the post-War era was geared to maintaining the status quo, the dynamics of the world capitalist system, the evolution of the Canadian economy, and social organisation of Western Canadian agriculture itself were all changing and transforming the external and internal context of the region and its producers.

Phase Three: Globalisation and Restructuring

In terms of the direction and objectives of federal agricultural policy, it is now clear that the 1960s were the definitive beginning of a transitional era. The 1970 report of the Task Force on Agriculture suggested that the problems that agriculture was facing were the result of a series of national and international processes, and that the eventual result would inevitably be a radical restructuring of Canadian agriculture. Indeed the key recommendations all pointed to a new era in agriculture and agricultural policy in which there would be fewer producers and in which governments would play a diminishing role while market forces played a greater role.

The political reaction to the Task Force Report was immediate and varied, with some lauding it for being a progressive and forward-looking blueprint for a rational restructuring of Canadian and Prairie agriculture, while others argued that the recommendations were a prescription for decimating Canadian agriculture and rural communities. In order to understand this seemingly radical change in federal agricultural policy it is necessary to combine an analysis of key changes to Canadian political economy with an understanding of the key transformations that occurred in the larger capitalist world system during the post-War period.

The internal structures of Prairie agriculture changed dramatically in the post-War era. On the Prairies the era brought a rapid period of mechanisation. In Saskatchewan, for example, the number of farm tractors rose from 54,129 in 1941 to 106,664 in 1951 and 126,613 in 1961. Between 1941 and 1961 the number of combines in Saskatchewan rose from just over 6,000 to nearly 43,000. During the same period the average investment per Saskatchewan farm in machinery and equipment more than tripled from $1,359 to $4,693. Another important process accompanied the mechanisation process as the number of farms began to systematically decline. In 1961 there were 93,925 farms in Saskatchewan, as compared to nearly 139,000 in 1941. These Statistics Canada Census data illustrate that a process of differentiation within the farming community was producing an agrarian class structure with clearer divisions between various fractions.

Fluctuations in the prices of agricultural outputs also characterised the post-War farm economy, although what Friedmann (1993) refers to as the post-War food regime mostly worked to produce a measure of economic security in Western rural communities throughout much of the 1960s and 1970s, although farm numbers were dropping and average capital investment and size were increasing rapidly. The spin-off effects of the baby boom, significant immigration, and high levels of government spending provided the basis for a couple of decades of significant prosperity and economic growth. As I argued above, significant structural changes occurred during the post-War boom, especially in the areas of state finances and the internationalisation of capital. The massive influx of transnational capital that entered Canada during the period of the War and the boom that followed changed the nature of the Canadian economy. The virtually uncontested rise of American-based multinationals to positions of economic supremacy was part of a change in the nature of the world economy that influenced the development of many national economies.

By the early 1970s it became increasingly apparent that the post-War boom was indeed over. The world capitalist system and the nations that compose it faced persistent inflation, growing government debts, currency instabilities, intracapitalist competition (as the economies of Western Europe and Japan prospered) and instabilities in the prices of many basic commodities including foodstuffs. On the agricultural front, prices and demand remained high in part as a result of the US policy of using food as foreign aid under the Marshall Plan and the huge US-Soviet wheat deal of the early 1970s. As wheat markets and prices began to fall in the face of increasing international competition, the fear of shortages was replaced by growing cereal grain stocks in North America, Europe, and Australia.

Larger economic changes including the continuing concentration and centralisation of capital on a global scale, continual mergers, bankruptcies, takeovers, and buyouts produced ever larger and more explicitly international blocs of capital. The terms globalisation and world economy gradually became part of the standard language of those in charge of the economy and the state. The widespread recognition that capitalism is indeed a global system was accompanied by shifts on the ideological front. In many Western nations including Canada, the emphasis on the role and importance of international competition was accompanied by increasingly shrill calls for nation states to make themselves more competitive, trim and fit to fight the good fight! At the national level this typically meant the adoption of neo-liberal, anti-Keynesian, economic policies that called for less and less government spending, less regulation, and less government involvement in the economy. Deregulation and government cutbacks became the order of the day. Since decades of spending, deficits, and growing debts brought most western governments to the brink of a fiscal crisis, politicians and the media were able to convince beleaguered taxpayers that the new international order demanded changes in "how we do things." The 1980s may well be remembered as the decade of state retrenchment, deregulation, cuts to certain areas of spending, and a massive ideological campaign to convince the citizenry of the necessity of various sorts of tough medicine. It should also be remembered as the decade of declining incomes, expectations, and futures.

In terms of agricultural policies and governmental attitudes toward agriculture, the decade appears to be somewhat contradictory. On the one hand, the massive American-European subsidy war drove down the international price of wheat to levels that have not been seen since the Great Depression, while on the other these subsidies contributed to state spending at a time of apparent fiscal restraint. Smaller nations such as Canada and Australia did not have the fiscal resources to compete and as a result the agricultural sectors, particularly the cereal grain industries, in these nations were driven into crisis.

Although the Canadian governments developed subsidy programs of their own, they simply lacked the fiscal means to make them really effective.

Since World War II, nation states have experienced an increasing loss of economic sovereignty as organisations associated with, and responsible to, the General Agreement on Trade and Tariffs, the World Bank, the International Monetary Fund, and various regional trade agreements such as NAFTA enforced new rules and regulations concerning tariffs and trade policies, economic strategies and agricultural policy.

In the area of agricultural policy, it seems apparent that as the twentieth century has progressed, the room to manoeuvre once available to nation states and blocks of national capital are simply no longer there. During earlier historical periods, such as the post-Confederation through the Great Depression era, it was in the interests of Canadian industrial, commercial and financial capital to establish and maintain an agricultural population on the Prairies. However, with the continued concentration and centralisation of capital that characterised this century and the emergence of huge blocks of multinational capital seeking accumulation strategies on the world scale, the role of the agricultural sector in Canada changed. Since multinational capital, by definition, seeks inputs and markets outputs on the international market, the central role that agricultural producers once played in capital accumulation in Canada changed. The transformation that Canada experienced was part of a larger worldwide restructuring of capitalism that is commonly referred to as the end of the Fordist era or the Fordist regime of capital accumulation. The generally prosperous era that was ending was based on mass production, low unemployment, rising consumption, typically bolstered in the western world by national welfare states and generally rising standards of living and expectations. It was, in a sense the era of "Happy Days," but the regime was predicated on an economic structure that was being transformed by the inherent dynamics of the capitalist system in the form of the concentration, centralisation and increasing internationalisation of capital. This is the context for George Grant's argument about how manufactures and financiers, once interested in capital accumulation in Canada, increasingly became part of larger and more concentrated and centralised international circuits of production, distribution, and capital accumulation. If we assume that capital has an overwhelming capacity to influence state policy, an assumption I set forth elsewhere (Knuttila, 1992), then we should expect that the "new reality" of the post-Fordist era will bring new agricultural policies.

The past two decades represent a virtual revolution in Canadian agricultural policy. Various Canadian governments, under the ideological umbrella of free-market economics and a more *laissez faire* approach to politics, have demonstrated a propensity to move away from supporting and encouraging agricultural production. In terms of Western Canada, the decline in government support for income support programs, agricultural research, the ending of the historic grain transportation subsidy known as the Crow Rate benefit, the ongoing diminishing of the power of the Canadian Wheat Board are indicative of the new era. When coupled with various proposals and policies regarding "rural adjustment" (read: the elimination and relocation of rural residents) and diversification, the new "policies" are clearly designed to allow the logic of the market to restructure prairie agriculture. If this means the elimination of thousands of producers and their communities, then it is to be understood as the price of progress and what is necessary if we are to compete in the new economic reality of the global marketplace!

Global Capitalism and the Rural Crisis

If the arguments presented above have validity, then an understanding of the evolution of capitalism as a world system will help to understand why governments have reacted differently at different moments in history. The maturation of capitalism accentuated the tendencies towards the concentration, centralisation, and internationalisation of capital, resulting in differing roles, opportunities, and possibilities for capital accumulation in different parts of the world. From around the middle through to the end of the nineteenth century there was "room" for indigenous economic development in nations such as Canada. Although chronic shortages of capital, small markets and less than state-of-the-art technology prevented it from overtaking or equalling the United States or Britain, Canada achieved significant levels of economic and industrial development. While much of that development occurred as a result of foreign investment, much of it occurred under the auspices of indigenous capital. There were key historical moments during which national industrial capital sought to use the national state to develop industrial development strategies involving tariff protection and an expanding agrarian market. Ultimately the presence and power of transnational corporate capital swamped these efforts. The adoption of a continentalist economic strategy spelled the end of the national policy in Canada.

As far as agricultural producers are concerned, they too operate and must be understood in the context of national economies which are part of a world system. At various times the Canadian government undertook systematic efforts to develop or facilitate domestic industrialisation based on expanding internal markets and the use of tariff-protected import substitution. Agricultural producers, especially cereal grain producers. figured prominently in these plans because they were deemed to be an essential part of the domestic market. There is evidence that agricultural producers fared better when they were central to domestic capital accumulation strategies. It follows that when agricultural producers were important to industrial development because they represented the core, or at least an important part, of an expanding domestic market, governments undertook efforts to maintain their position and keep them on the land. However, when the industrial capital becomes organised on an international scale and the market becomes global, the role and significance of particular national markets, such as western Canada, diminishes. Once the corporations producing inputs into agricultural production no longer rely on any particular domestic or national market, the loss of several thousand producers in Saskatchewan is no longer of any consequence to them. For some the declining number of producers is not a problem regarding the role that agriculture in Canada plays in terms of export earnings because new technologies and scales of production allow fewer producers to produce even more commodities.

I am suggesting the current calls for a restructuring of agriculture must be placed in the context of the role of agriculture in the "new international order." If we are to fully understand the transformations that are occurring in the prairies we need to spell out in more detail the precise nature of the changing role of agriculture in Canada, and the role and changing nature of state policy. Such an understanding is essential in order to engage in an analysis of the actions and reactions of the state. A clear understanding of the logic and direction of state policy is essential if agricultural producers and residents of rural communities are to be successful in resisting the destruction of their communities and way of life that the "new reality" threatens to unleash.

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Industrial Agriculture Comes to Saskatchewan

John W. Warnock

In 1958 Ray Goldberg of Harvard University coined the word "agribusiness" to describe the food system from farm inputs to the end product on the table. This was a recognition that food was no longer primarily associated with farming. He brought attention to the fact that a steadily shrinking share of the consumer's food dollar was going to the farmer.

There had been a transformation of the food production system since the end of World War II. The food processing and distribution sectors of the industry had rapidly expanded. There was a clear trend towards concentration of ownership and control. The conglomerate food firm was becoming the norm. In addition, many of the large retailers were vertically integrating back into wholesaling, food processing and even production on industrial corporate farms.

Among the economists, emphasis was being placed on creating "value added" to the farm product after it left the farm gate. Improvements in transportation, freezing, refrigeration, processing and a seemingly endless toolbox of food additives aided the centralisation of the industry. Farm products were increasingly seen as raw materials for further processing and packaging.

When women began to move into the labour force in a large way in the 1960s, agribusiness responded with more processed foods and fast food restaurants. The food industry ranked first in television advertising as companies sought to create brand identification.

Many saw this as a natural development, following the course of capitalism in general. The era of competitive capitalism seemed to end with the onset of the first world depression from 1873 to 1896. There was the introduction of monopoly, oligopoly, cartels, centralisation, and continued domination of Third World areas. The Great Depression of the

1930s and World War II stalled the growth of agribusiness, but it resumed after 1945 with American corporations leading the way.

Yet during this period of industrial concentration under capitalism, agriculture, for the most part, remained based on relatively small farm family production with private ownership of land. Domestic commodity production has been the dominant world model for agriculture in the era of monopoly capitalism (Winson, 1996; Goodman and Redclift, 1991).

The traditional family farm was based on diversity of crops, integrated with the raising of animals. Farmers practised crop rotation, the use of biological energy, and relied on much farm-generated input. Markets were usually close. Based on family labour, the farm operation was a different "way of life" from the urban population dependent on waged labour. Most farmers faced similar problems, and they were found in a few large diversified farm organisations. With their populist political ideology, they swung to the left and then to the right (Warnock, 1987).

But in the period after World War II this began to change. Animal production was separated from crop production. Factory farming developed for beef, pork, poultry, dairy, eggs and some fruits and vegetables. In these areas vertical integration with agribusiness firms emerged as the road for all progressive farmers. Crop specialisation became the norm, and this required heavy dependence on manufactured fertilisers and pesticides. Irrigation was expanded, particularly on large farms in areas where multiple cropping was possible. Agricultural economists and plant breeders stressed the need for economies of scale. Modern farmers saw themselves as running a business enterprise (*see* USDA, 1998; Browne et al., 1992).

In the 1970s it became common to talk about "food product chains" that existed on an international level. Large food corporations were buying farm commodities from all over the world and processing them to primarily serve the affluent markets in the industrialised world.

For the less developed countries, their basic structure of agriculture and food production had been transformed by hundreds of years of colonial domination. Production of food was no longer primarily to serve the needs of the local market. Under the colonial system of mercantile capitalism, plantation agriculture established the priority of growing cash crops for export. For most of these countries, it has proven nearly impossible to break these patterns of production and trade.

Harriet Friedmann stresses that in the more recent period, the corporate system began developing generic ingredients for durable foods: sweeteners, not sugar; thickeners, not flour or cornstarch; fats, not palm oil or butter; proteins, not beef or cod. The new chemical substitutions reduced export earning for Third World countries (1991).

The other development was the livestock-feed complex controlled by the large food corporation. Through vertical integration, the food corporation buys meats that are scientifically designed, provides standard manufactured inputs, and produces a standard product for the mass market. These capital-intensive operations are dominating the food systems of the First World. But they are also moving to the Third World where they are integrated through the foodstuffs industry. Again, production is aimed at the higher income market in the Third World and the export of frozen products to First World countries.

Industrial Agriculture

Today, the term agribusiness has been replaced by "industrial agriculture." How is this situation different from what has been developing since the end of World War II? (Clunies-Ross and Hildyard, 1992; Drabenstott, 1995; Sporleder, 1992; Urban, 1994; Westgren, 1996).

Many of those working in universities and with agribusiness describe the industrial phase the final stage of food production, the shift from the production of farm commodities for direct consumption to production for manufacturing. The cutting edge of farm production today involves increased capital and technology and vertical integration into the food processing industry.

Thomas Urban argues that farming will not become "corporate," that is, with corporations managing the land. "That has been tried, and with the few exceptions of some specialised crops, e.g., fruits and vineyards, etc., it has failed" (Urban, 1994).

Farmers will still own the land, provide and recruit labour, and manage the operation. Corporations do not want to sink money in land, pay wages for farm workers, and pay management as well. The returns on capital investment are higher elsewhere. Furthermore, they want to have the option of changing their sources of agricultural commodities, to be able to play one producer off against another. Today, vertical integration by short-term contract is the system being extended to all farming (Drabenstott, 1995; Sporleder, 1992).

The other general characteristic of the industrial food system is the continued and accelerated trend to concentration of ownership in food processing. For example, in the United States in 1973 the four largest milling firms had 33% of the market; by 1990 this had risen to 58%. In Canada today, Archer Daniels Midland (ADM), a giant U.S. agribusiness corporation, controls over 70% of the market.

In 1997, William Heffernan calculated the market share of the four largest firms in the major food processing sectors in the United States: broilers (55%), beef (87%), pork (60%), sheep (73%), turkey (35%), flour milling (62%), soybean crushing (76%), dry corn milling (57%) and wet corn milling (74%) (1998). According to Joe S. Bain's classic work on industrial concentration, all of these areas are characterised by oligopoly (Bain, 1956).

Many of the top agribusiness firms are dominant in more than one area, including ConAgra, Cargill, ADM, and Bunge. These, and the other firms listed by Heffernan, are well known to Canadian farmers.

A 1996 study by the U.S. Department of Agriculture on concentration in the red meat industry focused on the disappearance of a market price due to concentration of ownership of the meat packing industry and the widespread use of vertical contracts with producers. The data provided by the Grain Inspection, Packers and Stockyards Administration revealed that 300 large feedlots, delivering more than 16,000 head per year each, accounted for 57% of all cattle in the transactions. In contrast, 17,000 small producers, selling less than 1,000 head per year, accounted for only 22 percent of all transactions. They used the spot market and were virtually excluded from packer-fed transactions. Given the concentration in the meat packing industry, and the disappearance of the stock yards and public auctions, individual farmers and ranchers face the reality of having to deliver to that one processor which is closest to the farm (USDA, 1996).

The Impact of Biotechnology

The final stage of industrialisation has come with the introduction of biotechnology. The genetic manipulation of plants and animals has enabled humans to manipulate nature in the interests of corporate agribusiness. The introduction of patenting of plants and animals has permitted the corporate sector to further extend their control over the farming sector (Levidow, 1995; Ho et al., 1998; Mausberg and Press-Merkur, 1995).

In 1971 General Electric and one of its employees, Mohan Chakravarty, applied for a patent on a bacteria. In the laboratory Chakravarty had taken plasmids from three different bacteria and created a fourth. A patent was granted to GE; the U.S. government agreed that the micro-organism was not a product of nature but an invention and thus it was patentable. This decision was upheld by the U.S. Supreme Court (Shiva, 1997; McNally and Wheale, 1996).

The first political battle in the area of patenting food plants centred on "plant breeders rights" legislation introduced in the countries of the industrial world. This legislation, sponsored by large agribusiness, chemical and pharmaceutical corporations, guaranteed the right to patent plants and seeds. Those who opposed this legislation argued that food plants in general, and especially those developed at research stations and universities financed by public money, should be available to the general public without paying a royalty. The corporate sector won (Mooney, 1980).

Once patenting of life forms was accepted, agribusiness rushed into the area, backed by government money and the support of public research institutions and universities (Clunies-Ross and Hildyard, 1992; Goodman and Redclift, 1991).

The patenting of plants and animals by corporations and their control over farmers through contracts is seen as the final stage of industrial agriculture. Capital, technology and corporate control have permitted the complete integration of every step in the production of food (Drabenstott, 1995).

While vertical integration has been well developed in meat, poultry and fruits and vegetables, it is now being extended to the grain and oilseeds sectors. The first goal is to create end products for the supermarket that have brand identification. These are described as Identity-Preserved Products. They are outside the traditional markets and are produced at the farm level through contracts with strict controls.

Other new crops created by recombinant gene technology, which includes the transfer of genes across species barriers, are being produced in order to provide a particular agricultural input for food processing. For example, Thomas Urban predicts that by the year 2000, 25% of all corn production in the United States will be for processing for food products, energy, sweeteners, starch, proteins and oils (Urban, 1994).

On the farm level, Urban argues, the producers are being divided into two basic groups. The first are the "super farmers" who run business operations vertically integrated into the corporate sector. These farmers have significant net worth in land and buildings. The other group of farmers are the "sundowners," who manage to stay on the farm by getting most of their income from off-farm work by family members and who sell their product through the traditional commodity markets. These farmers, he argues, "will have a difficult time surviving the cyclical nature of commodities and attracting added capital and technology" (2).

The key is ownership and control of the products of biotechnology research. Thus, contracts with farmers make it very clear that they may not save seed from one season to the other; they must buy new seed from the corporation each year and pay a royalty. If they hold over seed without paying a royalty, or pass some on to a neighbour, they are taken to court. Those in vertically integrated livestock production are required to obtain their breeding stock from the integrating corporation, which uses a particular genetic strain.

Given the logic of biotechnology as it has developed, it is no surprise to learn that the U.S. Department of Agriculture, in a joint venture with the Delta and Pine Land Company, a leading breeder and producer of cotton seeds, has created and patented a process for producing plants which will have seeds which are unable to germinate. This is popularly referred to as "Terminator Technology" (Lewontin, 1998; RAFI, 1998).

Canada is in the forefront of the development of biotechnology. In 1997 there were about 4,000 transgenic plants in field trials in Canada. The Canadian Food Inspection Agency had already approved 28 varieties of plants for commercial use.

The biotechnology industry is controlled by a few very large agri-food, chemical and pharmaceutical corporations, all based in the First World, including Monsanto, Novartis, AgrEvo, Pioneer-Hi Bred, Dow AgroSciences and Dupont. In 1997 and 1998 there have been further mergers among these corporations. They are all working closely in partnership with government research institutes and universities, where they have succeeded in changing the direction of research in agriculture (RAFI, 1998; Sorja and Wilkinson, 1994).

All of this, of course, takes away what independence a family farmer once had. The new "super farmer" has been seen as "the piece worker" for the food corporations, the "new share-cropper," operating a "station on the food-production assembly line" and repeating the "putting out system" of early capitalism (Warnock, 1987).

When many small farmers in the United States objected to the new system of industrial agriculture, the U.S. National Commission on Small Farms proposed that the U.S. Congress amend the Agricultural Fair Practices Act to allow farmers to organise associations and to collectively bargain with agribusiness corporations (USDA, 1998).

Richard Lewontin, who teaches biology at Harvard University and has written extensively on biotechnology, argues that the farmer as an independent commodity producer remained outside the capitalist system through the ownership of the land, the ability to make decisions about what to produce and how to do it, while having the ability to provide some farm inputs like breeding stock, seed, traction power, and fertiliser.

But the present system of industrial agriculture is changing this, transforming the farmer into a proletarian. Individual ownership of land is declining; in the United States roughly 55% of farmland is now operated by owner-renters. Crop and livestock specialisation has forced the farmer to rely on purchased farm inputs. Vertical integration has removed most decision-making power. Today the farmer is simply a manager of the corporate-directed production of the agricultural raw material used for further processing (Lewontin, 1998). Even in this situation of corporate dominance over agricultural production, however, today's farmer still assumes all the risk.

The Free Trade Regime

The new industrial food system requires an open free trade system to work effectively. Agri-food corporations need the freedom to invest, produce, buy and sell in any market. They also need to have corporate patent rights extended to the international level, with sanctions to be enforced by governments and international institutions. They found strong support in the governments of the advanced industrialised countries (Heffernan and Constance, 1994; Lehman, 1997; Schmitz, Coffin and Rosaasen, 1996; Sheldon and Abbott, 1995; Broswimmer, 1991).

The U.S. government took on the task of changing the General Agreement on Tariffs and Trade (GATT) to expand its coverage to include the service sector and agricultural products. To set a precedent, the U.S. government concluded the Canada-U.S. Free Trade Agreement (CUSTA) in 1989 and the North American Free Trade Agreement (NAFTA) in 1994. These two international agreements covered agriculture and included patent rights, referred to as intellectual property rights. They set the standard for the Uruguay round of negotiations at GATT, which led to the formation of the World Trade Organisation (WTO) in 1995.

The provisions of the WTO reveal the power of the U.S. government. The First World countries agreed to cut their enormous subsidies to agriculture by at most 35%. Payments to farmers to withdraw land from agriculture are not considered subsidies. There is no limit on indirect subsidies. In 1995 the American and European governments spent $15.7 billion to subsidise wheat and corn alone.

In contrast, the Third World countries may no longer use quotas on imports to protect agriculture. Lacking the revenues to subsidise agriculture, this was the one way Third World countries could offer their farmers some support.

Third World countries may continue to use tariffs to protect food production. However, given the reality of sudden changes in the value of local currencies, the value of tariffs can be dissipated overnight, as occurred in Mexico in January 1995. Nevertheless, all but the poorest countries are required to reduce tariffs by 24% over 10 years. They are also required to phase out controls on the export of agricultural products and other natural resources.

The WTO establishes international food safety and pesticide standards under the Codex Alimentarius Commission in Rome. These standards are to set a ceiling for regulations. No country can introduce tougher standards without facing trade actions. Large agribusiness corporations dominate the Codex system.

The WTO treaty was drafted by the Quad Four group: the United States, the EEC, Canada and Japan. To gain membership in the WTO, and access to the markets in the industrialised countries, Third World governments had to accept intellectual property rights. The draft for the rules on patents was produced by the Intellectual Property Rights Committee in the United States, whose members are only large corporations (Goodman and Watts, 1994; Watkins, 1996).

The neo-liberal regime of free trade and the free unregulated market has assisted the trend towards concentration of ownership and control in the agribusiness sector of the economy, including the grain and oilseeds industry (Cook, 1994). Meat slaughtering and processing is a particularly noteworthy case. In the United States in 1997 Smithfield Foods, IBP, ConAgra and Cargill accounted for 60% of the pork slaughter. The four largest firms slaughtering beef were IBP, ConAgra, Cargill, and Farmland Industries. Between 1980 and 1997 these four beef packers increased their share of the market from 33% to 87%. The common trend on all these industries is towards vertical integration with large producers on a contract basis (USDA, 1996).

Changes in Saskatchewan

Most of the trends in agriculture and food production noted above were evident in Saskatchewan. On the farm level, there was a separation of livestock from grain and oilseed production. The cost-price squeeze reduced the number of farmers and increased farm size. There has been increasing reliance on manufactured fertilisers and pesticides. Technological changes in farm machinery have allowed a family to farm several sections of land without having to hire additional labour.

The impact of corporate control was mitigated by institutions that the farmers created over the years. Marketing boards based on central desk selling gave farmers some bargaining strength in their confrontation with large agribusiness corporations. Farmer-owned co-operatives provided competition in the area of farm supply inputs. The co-operative grain elevator system, and the federal regulation of the grain industry, provided a much better system for marketing grain than the corporate cartel that had existed before (Fowke, 1957).

Furthermore, the farm movement had significant influence within the established political parties. Whether it was Progressive Conservative, Liberal or New Democratic Party governments, farmers could expect political and financial support in hard times.

But this system of minimal protection for farmers was developed during the period of the Keynesian welfare state, which emerged following World War II. It began to disappear during the 1980s with the shift to the Thatcher-Reagan political economy, the new neoliberal regime of the free market and free trade (McBride and Shields, 1997; Teeple, 1995; Merrett, 1996).

A few figures will illustrate the changes at the farm level. Between 1971 and 1996 the number of farms declined from 77,000 to 57,000. The average size of a Saskatchewan farm increased from 845 acres to 1,152 acres. The total value of farm capital increased from $5 billion in 1971 to $32 billion in 1997. Land and buildings accounted for 68% of the total. Farm debt peaked in 1986 at around $6 billion, declined for a number of years, and then started rising again to $5.1 billion in 1997. Farm equity increased between 1993 and 1997 as debt declined as a percentage of farm assets, from 18% to 16%. Realised net farm income peaked in 1981 at just over $1 billion, declined to $773 million in 1994, and then fell to only $460 million in 1996. Farm bankruptcies peaked during the recession at 224 in 1991 and 191 in 1992. There were only 76 bankruptcies in 1997.

The family farm has persisted over the years by relying on the unpaid labour of family members. In recent years, farms in Saskatchewan have needed additional income from off-farm employment by family members. In 1995 the average farm in Saskatchewan had an income of $56,823. Of this, net farm income averaged $21,317 while total off-farm income accounted for $35,506. Income from off-farm wages and salaries accounted for $20,633. Census figures show that in 1996, 18,801 Saskatchewan farmers reported gross farm receipts of over $100,000. This was an increase of 30.6% over 1991, by far the largest increase of any province in Canada. Alberta reported 16,900 farmers in this class with an increase of 11.4% over 1991 (*Western Producer*, May 22, 1997).

To put this in perspective, Statistics Canada reported that in 1996 the average gross income of Saskatchewan tax filers was $16,800. The average for Saskatoon and Regina was around $23,000. But income figures give only give part of the story. Table 1 shows

Table 1. Equity Difference Among Saskatchewan Farmers

Equity Group	No. of Farmers	% Total Debt
1. High Equity (>96%)	20,000	2%
2. Medium Equity (76%–96%)	20,000	27%
3. Low Equity (<76%)	20,000	71%

Source: Farm Credit Corporation Survey, 1990.

Table 2. Economic Differences Among Saskatchewan Farmers

	High Equity ($)	Medium Equity ($)	Low Equity ($)
Short-term Assets	87,400	77,700	51,900
Intermediate-term Assets	99,600	144,600	120,400
Long-term Assets	247,800	313,300	226,800
Total Assets	434,900	535,600	399,200
Short-term Liabilities	700	7,300	25,600
Intermediate-term Liabilities	2,800	25,100	43,500
Long-term Liabilities	1,000	33,500	107,800
Total Liabilities	4,600	68,200	181,200
Net Worth	430,300	467,400	218,000

Source: Farm Debt Advisory Committee, March 1992.

equity differences among farmers. The financial statistics presented in Table 2 reveal economic differences among Saskatchewan farmers. The above figures show that in 1990 two-thirds of Saskatchewan farmers had no debt problems. In terms of liquid assets (cash, bonds and savings accounts) the High Equity Group averaged $57,000, the Medium Equity Group $32,650 and the Low Equity Group only $9,950. Yet the Farm Debt Advisory Committee estimated that around 13,850 of these farmers could be considered insolvent: their farm income could not cover the servicing of their debts. These data indicate that in Saskatchewan farmers are among the wealthiest people in rural Saskatchewan. That is similar to the general situation in the United States (Browne et al., 1992).

The new "super farmers" can be found on the Canadian prairies. The *Western Producer*, the weekly newspaper of the Saskatchewan Wheat Pool, featured one in October 1998. This family near Sperling, Manitoba-farmed 8,500 acres, of which 4,000 were owned and the rest were leased. They grew grain and special crops. They owned three large John Deere 4-wheel-drive tractors and one small field tractor, which were traded in every three years, four John Deere self-propelled combines, which were traded every year, a fleet of trucks and semi-trailers, and 65 bins to store the grain. The farmer hired two farm workers on a full-time year-round basis plus an additional four during the crop season. He needed $1 million to put in a crop (Siemens, 1998).

But in spite of the equity that farmers have in land, machinery, buildings and animals, they can all face a financial crisis when farm prices fall. This happened during 1998. Farm cash receipts fell by around 9%. The biggest drop in crops was for non-durum wheat, which fell by 48%. Receipts from the sale of hogs fell by 23% from the record set in 1997. But because farm input prices increased, and grain growers lost the subsidy under the

Western Canada Transportation Act, net farm income in Saskatchewan fell to around $190 million, and it was expected to fall even more in 1999 (Saskatchewan Agriculture and Food, 1998).

In the fall of 1998 the *Globe and Mail* (Toronto) featured one of these "super farmers" in a long feature on the "farm crisis." This farmer was located near Mayfair, north of North Battleford. He farmed 15 sections and ran 700 head of cattle. He calculated that with the low grain prices he was losing around $40 per seeded acre. His crop, which was quite good, was worth $100,000 less than it cost him to grow. How was he coping? He sold most of the Sask Wheat Pool shares that he had bought on the stock exchange, and he planned to sell some of his cattle. His neighbour, who was also in financial difficulty, had to sell six quarters of land and was able to get only $160 per acre. In 1995 the average price for an acre of farmland was $300. Surviving on the farm meant reducing farm equity (Mitchell and Scoffield, 1998).

But agriculture has changed in other ways. In the period before World War II most Saskatchewan farmers were wheat growers. There were only small differences in the size of farms. Almost all farmers confronted the same problems. The majority of farmers were found in a few large farm organisations. They fought political battles within the Liberal Party and then formed the Progressive Party. In the Depression they created the Co-operative Commonwealth Federation (CCF) and the Social Credit Party (Sharp, 1997; Melnyk, 1992; Laycock, 1990).

While wheat is no longer king, it remains the most important crop in Saskatchewan. But in 1997 cash receipts for wheat and durum provided for only 41% of farm receipts. Livestock accounted for 23%. In addition, a wide variety of oilseeds and specialty crops are grown.

In the 1950s a majority of Saskatchewan farmers were members of the Saskatchewan Farmers Union. But by 1998 the membership in its successor, the National Farmers Union, had dropped significantly. There is now a proliferation of commodity organisations. New farm organisations, like the Western Canada Wheat Growers Association (WCWGA) and the Farmers For Justice, strongly advocate a free market approach to farming and marketing and have no commitment to farmers' co-operatives or marketing organisations like the Canadian Wheat Board. As an example of this change in political outlook, in the December 1998 elections for the Board of Directors of the Canadian Wheat Board, farmer candidates supporting the system of dual marketing won nearly 40% of the vote and elected two of the ten board members (*Western Producer*, December 17, 1998).

These changes are reflected in the approaches of the political parties as well. The federal Reform Party, with significant strength in Saskatchewan, advocates free market principles similar to those of the WCWGA. The Progressive Conservative Party, in office in the province between 1982 and 1991, pushed in a similar direction. The Liberal Party in Saskatchewan remains committed to its traditional free market political ideology, but its support has faded.

The CCF began as a radical agrarian party. It remained a social democratic party in Saskatchewan after it became the New Democratic Party (NDP) in 1962. But as political historian Lorne Brown has argued, as farms consolidated and rural population declined, the NDP became mainly an urban party. The transition was completed during the period of the government of Allan Blakeney (1971–82). "But they were not becoming more of a

Labour party," Brown argues. "Rather they were becoming an urban liberal party firmly in the hands of professionals and bureaucrats." This development was consolidated with the 1991 election of the NDP under Roy Romanow (Brown, 1998). One of the most notable political changes by the Romanow government (1991–2000) has been their support for agribusiness and corporate farming.

The Power of Agribusiness

The negotiation and implementation of the Canada-U.S. Free Trade Agreement seemed to open the door to the expansion of agribusiness in Saskatchewan. The move toward free trade was strongly supported by agribusiness organisations like the Grocery Products Manufacturers of Canada, the Canadian Food Processors Association and the Canadian Meat Council. The food manufacturing industry pushed hard for the removal of marketing boards. Deregulation, a pillar in the new neoliberal order, was implemented by the Canadian and American governments to facilitate cross-border trade. Standards are being harmonised and set by the Codex Alimentarius system.

The climate for change in Saskatchewan has been enhanced by repealing the Western Grain Transportation Act, the deregulation of freight rates, rail line abandonment, the closure of many small elevators, the prospects of the disappearance of the Canadian Wheat Board, free trade with the United States, and the availability of high quality Canadian grains and oilseeds.

The trend towards greater corporate control of the food and agriculture system in Saskatchewan can be illustrated by developments in the grain and oilseeds industry, the hog industry, and in government promotion of biotechnology. There has been a scramble by the grain companies to grab the best locations on the main railroad lines. Cargill, the largest U.S. private corporation with annual sales of over $60 billion, was the first to move into the prairies, buying National Grain and establishing large throughput elevators and a range of agricultural services. By 1996 they had 62 elevators and had captured 10% of the prairie grain market. In 1996 ConAgra announced that it would be building three large terminal elevators at Corinne, Yorkton and Nokomis. This U.S. agribusiness giant had sales in 1996 of $25 billion (Kidd, 1997). In May 1997 ADM announced that it was purchasing controlling interest in United Grain Growers. Another of the largest U.S. agribusiness corporations, with annual sales of $13 billion in 1996, ADM had adopted a policy of taking over farmers co-ops, from Countrymark Co-op to Minnesota Corn Processor to United Co-operatives of Ontario. The fact that ADM and ConAgra had a widely publicised history of illegal and shady practices in the United States did not seem to bother Canadian officials or farm organisations (Krebs, 1997). In early 1998 Louis Dreyfus, the French grain company which is one of the largest traders in the world, announced that it would build three high-volume grain elevators on the prairies: two in Manitoba and one in Tisdale. As Lorne Hehn, chief commissioner of the CWB argued, the giant foreign corporations were preparing for the day when Canada would no longer market grains through the Canadian Wheat Board (*Western Producer*, April 30, 1998).

One of the justifications for the farmer-owned grain elevator system had been to capture some of the economic rent from agricultural production and keep it in the province. While the invasion by the foreign agribusiness giants was denounced by the National Farmers Union, the NDP government, their former ally, took a different position.

Agriculture minister Eric Upshall said that he "welcomed new competition in the province's grain handling industry" (*Leader-Post*, December 18, 1997).

The new competition has been a shock to the farmer-owned co-operatives. The Saskatchewan Wheat Pool has about 31% of the grain market on the prairies. They announced they would build 22 new high-throughput elevators in Saskatchewan and close down 235 of their existing elevators. The Pool has been moving into a wide range of agribusiness activities, including Robin's Foods and CanAmera Foods. They entered into several joint ventures with Cargill. But diversification into livestock was adopted as a new survival strategy: they would build 25 large corporate hog operations and eight 10,000-head feedlots (Schmidt, 1997).

When the managers and directors of the Pool decided in 1996 to go public and to raise capital on the stock market, strong resistance quickly developed among Pool members. But Pool management refused to allow members a vote on the decision, producing a bitter division within the co-operative. This conflict erupted again at the November 1998 annual meeting. Around 65% of the delegates supported a resolution opposing the demolition of the small-town elevators. A survey by the Pool management found that only 46% of members believed that closing the elevators was necessary to develop a more efficient grain handling system. But of even more concern, only 47% stated that they felt like an owner of the Pool (Briere, 1998).

Manitoba Pool Elevators and the Alberta Wheat Pool tried to buy controlling interest in UGG, and when that failed, they merged and formed Agricore Co-operative Ltd. This gave them about 25% of the grain market on the prairies. They are going to try to survive by maintaining the company as a co-operative. But they are also closing smaller elevators and building high-throughput elevators. However, the building of all the new large elevators is creating a significant overcapacity. In the squeeze that will follow, further takeovers are to be expected (*Financial Post*, October 31, 1998).

The implementation of the Canada-U.S. Free Trade Agreement has spurred economic concentration in the meat industry in Canada and has encouraged foreign ownership. Cargill built a new plant at High River, Alberta, to slaughter beef. IBP bought Lakeside Packers at Brooks, Alberta, a cattle slaughterhouse. Most recently Smithfield Foods, the largest vertically integrated pork processor in the United States, bought Schneiders, which had just built a new hog slaughter operation in Winnipeg. The largest Canadian meat packer, Maple Leaf Foods (formerly Canada Packers), bought Burns Foods, closed the Gainers Plant in Edmonton, and announced the building of a new plant at Brandon, Manitoba. The Saskatchewan Wheat Pool, now one of Canada's largest agribusiness corporations, bought a 45% interest in Fletcher's Fine Foods, which operates a hog slaughtering plant at Red Deer and processing plants at Calgary and Edmonton. Moose Jaw Packers was bought by the Tai-Fang Group of Taiwan, which also bought a minority share of Intercontinental Packers in Saskatoon.

In 1988 Chris Mills did a study for the Alberta livestock and meat packing industry. He concluded that if the Canadian industry was to survive in a North American market, Canadian wages and benefits had to be reduced to the levels in the United States (*Western Producer*, September 29, 1988). One of the major changes in the U.S. meatpacking industry has been the successful attack on the trade unions. Industry-wide bargaining was eliminated, and corporations were able to impose a roll back of wages and benefits. The result is an industry, which now relies on immigrant workers who are paid close to the minimum wage (Cooper, 1997).

There has been a series of bitter strikes at Canadian plants in response to efforts by the Canadian-based corporations to get their workers to accept major reductions in wages and benefits. The workers lost all these strikes, and in 1998 starting wages in the prairie packing plants had been reduced to only $8 per hour. One result has been a shift to immigrant workers and a high turnover of labour.

As in the United States, the large packers are moving towards vertical integration with producers. In the hog industry, this required the abolition of single-desk marketing boards. The government of Manitoba did this in 1995, and Alberta followed in 1996. In October 1997 the NDP government in Saskatchewan unilaterally abolished the marketing monopoly held by Saskatchewan Pork International (SPI). Producers were denied the right to vote on the issue. The protests from the National Farmers Union and family-farm hog producers were ignored (*Western Producer*, October 30, 1997).

Intercontinental Packers of Saskatoon had signed a general contract with SPI, but the Saskatchewan Wheat Pool demanded the abolition of the marketing board's monopoly so that they could market the hogs from their corporate mega-barns to their plant in Alberta. The other large private hog corporations also put pressure on the NDP government, as they also wanted specific contracts with meat processors. The move away from family-farm pork production to giant hog factories has been strongly supported by the NDP government. The push for expansion has not come from market pressure, a rise in hog prices, but active promotion from government, business and university professors. The Saskatchewan Department of Agriculture and Food created Pork Central to head a propaganda campaign. The Romanow government announced that it wanted to see hog production increase from one to three million hogs.

The government has supported the new factory farms through tax breaks, direct financial assistance and political action. Research money has been redirected to the Prairie Swine Centre in Saskatoon. The new giant hog barns were declared to be "farms" and exempted from provincial labour legislation and the provincial Environmental Assessment Act (*Western Producer*, September 24, 1998). Big Sky Farms near Kelvington was one of the first operating pig factories and is as a good example. They have a contract to deliver hogs to Maple Leaf Foods. The corporation has received financial assistance from the Saskatchewan Growth Fund, the Saskatchewan Opportunities Corporation and the Agricultural Credit Corporation of Saskatchewan. Darrel Cunningham, former minister of Agriculture in the Romanow government, is chairman of the board (Big Sky Farms, 1998).

The biggest problem with the large pig operations has been manure management. A hog produces 2.4 times as much waste per day as a human being. Wherever these large pig factories have been established, they have resulted in the pollution of surface and ground water. This is true in Denmark, The Netherlands, Taiwan, North Carolina, Iowa, Quebec and Alberta. It is not just the nitrates and phosphates. Pig excrement contains heavy metals, parasites, bacteria and viruses. Parasites have become a serious problem in the water supplies in southern Alberta (*Western Producer*, January 29, 1998; October 2, 1997).

When Kelvington-area residents and farmers formed the Coalition for Environmental Protection to oppose the Big Sky development, and went to court to demand an environmental assessment, they were strongly opposed by the NDP government. Eric Upshall, the minister of agriculture, promised to introduce new provincial legislation to prevent local citizens from going to court and using environmental regulations to try to stop large animal confinement operations (*Leader-Post*, November 21, 1997; March 6, 1998).

Hog farmers put pressure on the provincial government when prices fell drastically in 1998. In response, the NDP government announced a special farm loan program to assist the industry. The National Farmers Union and other hog farmers asked the province to put a cap of $100,000 on the loan program and limit recipients to family farmers. They did not want to see the industrial hog producers and their investors benefit from the subsidy. But Eric Upshall, the minister of agriculture, refused to apply a cap to the program and insisted that it include the corporate hog sector (*Leader-Post*, December 16, 1998; December 19, 1998).

In 1996 there were around 2,200 farms producing around one million hogs in Saskatchewan. But the trend is to large hog-confinement operations. In that year the top 142 farms produced 64% of the total. The policies adopted by the NDP government are designed to accelerate this process.

The governments of Grant Devine and Roy Romanow have strongly supported the development of a biotechnology industry in Saskatchewan. The shift in policy direction has resulted in the virtual disappearance of government support for ecological and sustainable agriculture. The Saskatchewan government has funded Ag-West Biotech Inc., a non-profit corporation in Saskatoon whose mandate is to promote biotechnology. It has also financed the development of Innovation Place, a large industrial park attached to the University of Saskatchewan, which houses the biotechnology industry. A key part of this development has been the transformation of the National Research Council Agricultural Research Station. In the past, the National Research Council in Saskatoon conducted important research in food plants for use by all prairie farmers. Traditional plant breeding brought forth canola. Important research has been done on biological control of weeds and insect pests. But the direction of research is changing. The federal government has transferred the Molecular Genetics Section and the Plant Gene Resource of Canada storage facilities from Ottawa to the expanded Saskatoon plant. It is now called the Plant Biotechnology Institute, does research in co-operation with private interests, and its results are patented. Farmers must now pay a royalty to a private company to use the product of public research (Moon, 1998; Ag-West Biotech, 1998).

Research done at the University of Saskatchewan is also shifting. The Crop Development Centre produced close to 100 crop varieties and established pulse crops for the prairies. But it is also shifting into genetic engineering, beginning with flax. Innovation Place is a duplication of the model developed in the United States. Public money and public research institutions are being used to do the costly basic research that the large private corporations do not want to do. The private corporations for production and market-ng then appropriate the end results. This university park is also home to Canadian and nternational corporations engaged in biotechnology research, including AgrEvo, BASF Canada, Dow AgroSciences, and Monsanto. Ag-West Biotech claims that Saskatoon has the third largest biotechnology centre in the world. It is also alleged that more field test-ng is done in Saskatchewan than anywhere else in North America. Brewster Kneen argues hat AgrEvo is extensively involved here because it can do research, development, and ield testing that it is forbidden to do in Germany (Kneen, 1998).

The most publicised biotechnology development in Saskatchewan has been the creation of herbicide-resistant strains of canola. For example, Roundup Ready canola is a genetically modified plant that is resistant to Monsanto's powerful Roundup herbicide. Other companies sell similar products. Monsanto argues that using their patented seed permits farmers to use Roundup, which kills all other plants, and reduce herbicide use. However, in 1997 many farmers reported poor production from genetically modified seeds. This was not confined to one variety. Similar problems have been reported in the United States. Across the prairies, farmers were negotiating compensation from the seed corporations, including the Saskatchewan Wheat Pool (*Western Producer*, November 20, 1997).

Some biologists have argued that inconsistent production is to be expected. They point out that traditional breeding methods involve crossing with closely related varieties or species that have the same genes and have been field tested in the appropriate environment. The transgenic organisms have much greater genetic instability (Ho et al., 1998). In addition, after only two years of seeding, herbicide-resistant plants have become a new weed problem. Volunteer canola plants, resistant to herbicides, are being found in previously seeded fields, ditches, roadsides, shelterbelts, and gardens. So many volunteer plants were being found in previously seeded fields that they were beginning to disrupt farmers' crop rotation programs. In addition, pollen from genetically modified varieties of canola was spreading to other canola fields (*Western Producer*, November 19, 1998).

In 1998 it was reported that insect-resistant Bt corn hybrids were already beginning to produce new insect populations that were resistant to the Bt toxin that had been genetically engineered into the seeds. This genetically modified corn, created to resist the European corn borer, is being introduced in Manitoba and Alberta by Monsanto and Pioneer Hi-Bred (*Western Producer*, November 19, 1998).

While governments and industry are actively promoting the expansion of genetic modification of food plants, the results to date have been problematic. In addition, the concerns outlined by environmentalists already seem to be coming true.

Conclusion: Industrial Agriculture, Sustainability and Rural Survival

Traditionally a farming system was judged to be efficient when it returned more energy than was expended. For example, on average slash and burn agriculture produced 16 calories of energy for every one expended. Traditional Chinese wet-rice farmers harvested 50 calories for every one consumed in the production process.

Industrial agriculture depends on a huge fossil fuel energy subsidy. On the farm level today, it takes on average three calories of energy to produce one calorie of food. When one adds in the cost of the processing, packaging, storage, distribution, and home preparation, it costs about ten calories of energy to put one calorie of food energy on the table (Steinhart and Steinhart, 1974).

Today, farmers do not produce fresh food for the local markets. Corporations manufacture and distribute food for an international market. The average product on the shelf in the Safeway store in Regina has travelled over 1,000 miles. Not only is this system destructive to local rural communities, and unsustainable in ecological terms, it delivers food which is less nutritious and of poorer taste. Industrial agriculture also results in uniform products produced through a dangerous narrowing of the genetic diversity of plants and animals.

The problems we know in Saskatchewan are found throughout the system. The soil is depleted of organic matter and fertility from constant cropping. There is wind and water erosion. In 1997 Saskatchewan farmers allocated 15% of their farm operating costs to fertilisers as they try to compensate for decreasing fertility. Between 1987 and 1993 pesticide use in North America increased by 78%, but pest problems remain as serious as ever before. Insects and plants we call weeds are constantly developing resistance to pesticides. Our water supplies are polluted by pesticides, fertilisers, and effluent from intensive livestock operations (Meeker-Lowrey, 1995; Lowe et al., 1996).

The move towards the industrial food system and large corporate-style farms also produces high social costs, which must be born by the community. This is very evident in Saskatchewan. The population and economic base of rural society is undermined. Young people are forced to leave to find work. When rail lines are abandoned, and elevators shut down, small towns disappear and the increased cost of transportation is born by farmers. The destruction of highways by large trucks is paid for by higher local taxes. The increased isolation of and competition amongst farmers leads to the breakdown of community structures.

It is an article of faith of those who are in the business of promoting the industrial food system that this is all the result of consumer demand. Yet critics point out that the food industry is the largest advertiser in North America, and product differentiation is a central marketing strategy of all the food processors. The corporate sector seeks to create the demand. No one could argue that the new biotechnology revolution is in any way the result of consumer demand. Numerous public opinion polls show majority opposition to genetic manipulation of food products. The agribusiness giants, and their allies in the Canadian and American governments, are doing everything possible to defeat consumer and producer demands for the labelling of all food products that include GM products. A poll by Novartis in February 1997 in the United States found that 93% wanted genetically engineered foods labelled. Recently, Monsanto hired Burston-Marstellar to conduct a media-advertising blitz in Europe to try to undermine strong public opposition to biotechnology (Smooth Facade, 1998).

But this restructuring of food and agriculture has not gone without opposition. It has become a worldwide battle, with popular groups aligned on an international level. At the meetings of the WTO there was strong opposition from many governments from Third World countries. Non-governmental organisations representing small farmers, environmentalists, indigenous peoples and consumer groups have mounted a concerted attack on this new regime. The conflict was prominent at the UN Conference on Environment and Development in 1992, the meetings surrounding the Biodiversity Convention, the 1996 World Food Summit, and the UN Food and Agriculture Organization's Conference on Food Security in November 1997.

At the World Food Summit in Rome, in November 1996, over 800 non-governmental organisations from 107 countries were present to demand food security and rights for small farmers. One of the strongest voices there was Via Campesina, a movement of farm workers, peasant, farm and indigenous people's organisations. The National Farmers Union plays a leadership role in this organisation (Machipisa, 1996).

There are many concerns about biotechnology, and in particular, creating new plants and animals by moving genes across historic species barriers. The general public is concerned about the long-term effects of genetic manipulation. There is opposition from consumer, environmental and farming groups who see it as a continuation of unsustainable agriculture. There is very strong opposition in Third World countries (Shiva, 1997; Kloppenburg and Burrows, 1996; Regal, 1995; Wills, 1995).

A number of international organisations have led the resistance to genetically engineered foods, including Consumers International, Genetic Resources Action International (GRAIN), the Indigenous Peoples' Biodiversity Network, the Institute for Sustainable Development, Rural Advancement Foundation International (RAFI), and Third World Network. The Campaign for Food Safety leads international protests on World Food Day.

In Europe, where the opposition to biotechnology is strongest, resistance has moved to civil disobedience and direct action. In Britain, Earth First and other groups have destroyed corporate test fields. Demonstrations and similar direct actions have taken place on continental Europe, led by European Farmers, Co-ordination (Vidal, 1998).

In Canada, the campaign against biotechnology is led by RAFI, the Canadian Environmental Law Association, the Canadian Environmental Network, the National Farmers Union and several provincial organisations. Most notable is the British Columbia Biotechnology Circle. A Biotechnology Working Group has been formed by the Saskatchewan Eco-network.

In North America, the organised resistance to the new food regimes is most advanced in the United States. Organisations representing family farmers sought out environmental and consumer groups to build community opposition. One is the National Coalition for Family Farms and the Environment, which has taken the lead in opposing the expansion of corporate pig factories. They are being backed by the Environmental Defence Fund, the Sierra Club, the Natural Resources Defence Council, and the Humane Farming Association. In a number of states, these organisations have used the initiative to introduce legislation or amendments to the state constitutions to block or control corporate farms. The strongest to date is the constitutional amendment adopted in Nebraska in 1982. Eleven other states have passed some form of anti-corporate farming laws by the initiative process (Center for Rural Affairs, 1995; Strange, 1997).

In the November 1998 U.S. federal election, initiatives that amended state constitutions were passed in Colorado and South Dakota. The Colorado initiative put strict restriction on factory hog farms, and the South Dakota initiative prohibits non-family farms from owning livestock. Because of the South Dakota campaign, Tyson Foods and Murphy Family Farms, two of the largest integrated hog operations in the United States, cancelled plans to move into South Dakota, and Minnesota Corn Co-op/ADM cancelled plans to build a 30,000-head feedlot (NRDC, 1998).

Just south of the Saskatchewan border, the Western Organisation of Resource Councils has emerged as a leading force for rural community organisation. Originally formed by ranchers, WORC today is a federation of 42 citizens' groups in North Dakota, South Dakota, Idaho, Montana, Wyoming and Colorado. They have led a fight against pollution by mining interests and destruction of federal lands, demanded stronger environmental regulations for land and water, and pushed for higher royalty taxes on oil and mining. They denounced the proposed national organic foods standards as "a wholesale and inexcusable sell-out by the USDA to corporate agribusiness" (WORC, 1998).

But WORC is best known for its campaigns against monopoly in the beef industry. The 1996 USDA study on concentration in the meat packing industry reported that producers felt powerless to deal with the large corporations, were fearful of vertical integration, and argued that the level of concentration allows the corporations to manipulate prices.

In 1996 a group of 10 U.S. beef producers filed a class action suit against IBP. They argue that IBP fixes prices and does not have to compete in the market because they control between 20 and 50% of local markets through contracts. Between 1990 and 1996 the farm value of the consumer beef dollar fell from 60% to 47%. WORC helped found the Cattlemen's Legal Fund to fight the case. They were joined by the U.S. National Farmers Union, the National Farmers Organisation and others (WORC, 1998; "Ranchers," 1998).

The class-action suit against IBP was backed by an Amicus Brief from the Canadian National Farmers Union. Nettie Weibe, president of the NFU, argued that Canadian family farmers also opposed "captive supplies" which depress prices. She noted that the U.S. giants IBP and Cargill controlled 66% of the Canadian beef packing capacity (Cattleman's Legal Fund, 1998).

In Saskatchewan the government's push to support corporate pig factories is strongly opposed by the National Farmers Union, the Saskatchewan Environmental Society and local community groups linked together through the Coalition for the Protection of the Environment, based in Kelvington. The Saskatchewan groups are linked through the Internet to similar groups in the United States. They have received strong support from similar farm alliances in Iowa and North Carolina. The Kelvington group went to court to try to get corporate pig factories declared "industrial developments" rather than farms, so as to be covered by provincial environmental legislation. The NDP government fought this case to the Supreme Court of Saskatchewan where the corporate sector won in a controversial case.

If the industrial food system were really being driven by consumer demand, then the move would be towards organic agriculture. On a worldwide basis, in 1997 organic food products represented a market of $11 billion. It is a market that is growing 20% per year. The poll by Novartis revealed that 54% of Americans wanted to see agriculture move towards organic production. This consumer interest is being recognised in Europe by large food chains. But organic production cannot meet the market demand. In Europe, most governments are offering strong support for organic agriculture. Many governments have grant programs to help mainstream farmers make the transition (Orton, 1998).

There are around 600 organic farmers in Saskatchewan. Their interests are represented by the Saskatchewan Organic Development Council. They need government support to help develop a province-wide system of processing, distribution and retailing. But with the government strongly committed to the industrial food system, they are being ignored. One new development in Saskatchewan is the formation of the New Green Alliance, a new political party that opposes corporate agriculture and genetically engineered foods and supports sustainable and organic agriculture.

Agriculture and the food industry have always been the most important industry in Saskatchewan. The trend towards industrial agriculture was always present as farmers were forced to compete with one another and adapt technological change in order to survive. In the past grain farmers formed co-operatives, supported marketing boards and formed political parties to defend their interests. But in the neo-liberal era of the free market and free trade, the trend towards corporate farming and increased corporate control of the food industry has intensified. The political parties that used to support family farming have embraced the new neo-liberal order. But there is still strong opposition to these trends from farmers, consumers, and environmentalists.

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The Decline of Agrarian Radicalism on the Canadian Plains

Roy Atkinson and James N. McCrorie

Of the geographic regions of Canada, the prairies have long enjoyed a reputation for radical thought and populist action. This has been particularly true of the agricultural community, where paradoxically, individual, private farm proprietors developed a capacity for a critical analysis of the larger capitalist society and a tradition of collective responses to political and economic challenges and problems.

This capacity for radical thought and tradition of collective action developed unevenly, over a period of time, in a context of struggle over the requirements and provisions of federal "national policy" (Conway, 1983; Finkel, 1989; Fowke, 1956; Knuttila, 1994; Lipset, 1950; Macpherson, 1968; McCrorie, 1971; Moorhouse, 1918; Morton, 1950; Patton, 1928; Taylor, 1994; Wright, 1956; Yates, n.d.).

At the turn of the century, the analysis was issue-specific, focusing on the grain handling, marketing and transportation systems, over time, it broadened out, adding international trade, the wholesaling and retailing of farm production and home inputs, agricultural machinery and conventional or "old line parties" to agrarian scrutiny. By the 1930s, capitalism itself was found wanting and the call for socialism arose out of the dust and despair of the Dirty Thirties.

A tradition of collective action developed in two ways: informal and formal. Pioneers discovered that the private ownership of land was an insufficient condition to survive as an agricultural producer. Farmers had to learn to co-operate in an informal way over a number of tasks. While the decision about what to plant may have been a private one, it was, more often than not, reached through conversations with others: at the elevator, in town on a Saturday night, across a fence during the spring preparation of the land. If a farmer fell ill during harvest, the family could expect the assistance of its neighbours, at no cost. Bees were organised to raise barns and outbuildings. Community halls were built with volunteer labour. Socials were organised to raise money for a wide variety of worthy causes. Volunteering in the cause of a greater social good became a prairie way of life.

On a formal level, the requirements and provisions of national policy were gradually attacked one by one, and challenged by the creation of alternative institutional arrangements. The Grain Growers Grain Companies (1905)—now the UGG—and the co-operative elevator companies (1911) were organised in competition with private capital and the line elevator companies. The Pools (1924) were organised in opposition to the Winnipeg Grain Exchange. Broad-based support for orderly marketing compelled the federal government to continue the Canadian Wheat Board after World War II. Local merchants were challenged by local retail co-operatives. Federated Co-operatives Limited was built to counter private, regional wholesalers. Credit Unions were organised to counter the power and influence of the private banks. Canadian Co-operative Implements Limited (CCIL) was built in competition with the farm machine companies. A co-operative oil refinery was built in Regina. The Progressive Party, then Social Credit and the CCF arose in opposition to the Conservative and Liberal Parties. And where and when Liberal and Conservative Parties held provincial office, they felt it necessary, from time to time, to distance themselves from their federal cousins.

On a related matter, all three prairie provinces took a benign view of public utilities. Telephone companies were eventually nationalized in all three provinces. Manitoba and Saskatchewan nationalized power and gas and Saskatchewan nationalized the provincial bus companies.

This capacity for radical thought and tradition of collective action developed through struggle, often long and bitter struggle. And there were times when the ideological hegemony of the agrarian radicals was fragile indeed.

It is important to recall that the provisions of the Dominion Lands Act (1870) provided for the private ownership of land and envisaged prairie agriculture as a growing industry based on an expanding number of self-sufficient, farm family units (Lambrecht, 1991). This proved to be a popular strategy, particularly among land-hungry immigrants from the United Kingdom and Eastern Europe. Private property, the ownership of one's land-became an article of faith, obliging the CCF in the middle thirties to abandon an earlier policy that called for the nationalization of farm land.

To many producers and their families, the creed of individualism, responsibility and accountability was as axiomatic as the right and sanctity of private property. They celebrated acquisitiveness and welcomed competition with their neighbours as a means of farm enlargement and creation of greater wealth.

At the risk of over simplification, they accepted many of the provisions of national policy. They certainly did not quarrel with the general rules of capitalist development and tended to view farming more as a business than a way of life.

It was against these producers and their ideological tenants that the agrarian radicals struggled, often raising the debates to an ethical and moral plain that drew inspiration from the social gospels (Allen, 1971; Stirling, 1997).

Who were the agrarian radicals? Two historical studies of the Saskatchewan Farmers Movement suggest that they were rooted in the agrarian middle class (Lipset, 1950; McCrorie, 1971). What does this mean? In the first instance, it acknowledges that over

Table 1. Percentage Distribution of Prairie Farms by Size, Selected Census Years, 1901 –61

Acres	1901	1921	1941	1961
Under 200	58.4%	41.1%	30.4%	19.5%
201–639	41.6%	58.9%	44.3%	47.7%
640–1,279			14.3%	25.3%
1,280 or more			2.7%	7.5%
Total	55,176	255,657	296,469	210,442

Source: Canada, Population Census, 1961.

time equality in land tenure at the time of homesteading gave way to differential access to the means of production (see Table I). A few acquired vast land holdings (through ownership and rent) and invested in the appropriate capital equipment to work their farm. A greater number remained small units, or became marginal, part-time producers. As Table 1 shows, up until the 1960s, most farmers operated medium-sized holdings, made up of owned and rented land. It is from the ranks of these producers that the agrarian radicals arose. It was, in turn, to these producers that radical thought and collective action had a measure of appeal.

In writing of tendencies, it is tempting to suppose that dispositions to thought and proclivities for collective action were widespread and held throughout either a class or a community with conviction. This was never the case. To the contrary, the agrarian radicals were always few in a number, a creative and often ignored minority within their respective rural communities. Moreover the degree to which contentious issues were clearly understood and the reasons why individuals stood together or voted in a particular way invariably varied.

Nevertheless, a legacy of radical thought and collective action took root on the prairies and for a considerable period of time enjoyed a measure of hegemony within the political and social culture of the region.

Since 1961 and the Medicare struggle in the province of Saskatchewan, this legacy has begun to wane. Retail, wholesale and insurance co-operatives—once viewed as a means of "changing the world," now boast as offering a means of integrating with it. The Saskatchewan Wheat Pool, once the *primus inter pares* of the prairie marketing co-operatives, has abandoned its founding principles and become a private company, with a listing on the Toronto Stock Exchange. The UGG has been taken into the financial orbit of Archer-Daniels-Midland, a major multinational agribusiness firm with headquarters in the United States. The Alberta and Manitoba Wheat Pools have merged into the one remaining large agricultural co-operative. The CCIL has long since departed from the farm machine industry. The Conservatives have sold off Manitoba Telephone Company. In Alberta, privatization of public assets continues unchecked. The Ministry of Agriculture has come to believe that it can discredit the Canadian Wheat Board with impunity. In Saskatchewan, an NDP government refuses to reintroduce the Land Bank. Rail line abandonment, deregulation of rail transportation and the loss of the Crow's Nest Pass Grain Rates, the sale of the Hudson's Bay Railroad to an American-owned short line rail operator have all combined to remove from prairie farmers a transportation system that once operated in their interests. Nowhere, across the vast prairies, is there to be found a strong, articulate voice calling for the redevelopment of agriculture along social and humanist lines.

To the contrary, the recent case of the Saskatchewan Wheat Pool suggests an opposite strategy. Over the years, a vigorous management, trained in "business administration," has wrestled the initiative from the farmer membership in defining the company's economic and organisational imperatives. These imperatives, in turn, have been conceived and defined in capitalist, not co-operative terms. A vast elevator network, once designed in the farmers' interests, is being gradually abandoned in favour of a $200 million program to construct 16 high-throughput terminals in the three prairie provinces, invading and threatening the territorial domain occupied by the Alberta and Manitoba Wheat Pools. (The plan calls for six terminals in Alberta, eight in Saskatchewan and two in Manitoba.) To this end, the company converted from a co-operative to a private stock company, trading on the Toronto Stock Exchange. Finally, in keeping with its commercial competitors such as Cargill, the company is expanding into "value added" operations. In the words of the CEO, the Pool is becoming a "world scale, state of the art company." Put simply, management was able to persuade the directors and delegates—all elected by the farmer membership—that the future of the Pool lies in denying and betraying its history.

True, the tendency towards the right is uneven. On March 25, 1977, 88,212 barley producers voted on whether the crop should remain under the jurisdiction of the Canadian Wheat Board. Sixty three percent (58,042) voted in the affirmative, suggesting that support for collective over private marketing continues to enjoy a considerable measure of support. But this was clearly a defensive reaction and has not been matched by a vigorous, effective and public resistance to the privatization of the Saskatchewan Wheat Pool and the deregulation of rail transportation. Indeed, it could be argued that since the advent of the Saskatchewan Land Bank in the early 1970s—an innovation that the Tories abandoned and the NDP fear to revive—there have been no new initiatives for collective solutions to private, economic problems and anxieties. Indeed, a recent study of farm stress in Saskatchewan underlines the degree to which an economic crisis has been "privatized" by those affected by it (Kubick, 1996).

The principle reason for this turn of events we suggest, lies in the failure of the agrarian middle class to defend its populist legacy and reproduce itself.

First, it is clear that the number of farms on the prairies is declining, from 174,653 units in 1971 to 143,791 in 1991—a drop of 18% over a 30-year period. At the same time, farm capital is becoming more and more concentrated, with a small number of large farms producing a greater share of agriculture sales and wealth (see Conway, 1984; Bollman and Ehrensaft, 1988; Ghorayshi, 1989). Finally, it is increasingly from the ranks of the medium-size producers (however operationally defined) that more and more land is becoming available for farm unit enlargement. It has become more and more financially impossible for these producers to pass their farm on to another generation.

Why? To reply in terms of the cost-price squeeze begs an answer. Clearly, farm producers can do little to determine the international price for their products. It remains to examine the cost side of the ledger.

Here, two principle means of production stand out: land and machinery. It is clear that the price of purchasing land is the most significant cost of production. In the early 1970s, the Saskatchewan NDP—alone among the prairie farm organisations and political parties—endeavoured to address the price of land as a discouragement to younger farmers entering production by creating a public land bank that would purchase a farm family's land at market value, then rent the land back to the producer for a nominal fee. The family's heirs were to be given the first option to take over the lease when the lessees retired.

In 1972, the Blakeney government created the Saskatchewan Land Bank. Between then and 1982, when the Devine government discontinued the program, there were 12,486 applications to the Bank for sale of land. The number of lease agreements entered into was 3,853, covering 1,277,823 acres, 75% of which were cultivated. The average age of the lessee was 33 (Gidluck,1995).

A similar reform in land tenure, with its clear cost advantage to young, medium-size producers, was not considered in either Manitoba or Alberta. Since 1982, there has been no concerted attempt to revive the program in Saskatchewan. There has been some talk within Farm Union and NDP circles to consider local, public, land trusts, without results, while activists within the church have nursed to life one fledgling land conservancy in Saskatchewan.

Access to land for the purpose of farming remains, for most, prohibitive. The decline in the total number of farm units and the increased concentration of capital continues.

For the better part of this century, the agrarian radicals complained about the high cost of farm machinery. During the 1930s, the United Farmers of Manitoba, Saskatchewan and Alberta called for the nationalization of the farm machine companies, a proposal later adopted by the CCF in all three Prairie provinces.

In 1941, an alternative solution—co-operation—was adopted with the establishment of Canadian Co-operative Implements Limited (CCIL). Its range of products developed slowly and its market share was always modest. Most important of all, it accepted the ideological hegemony of the industry in believing that big was better. Instead of developing a line of intermediate technology, appropriate and affordable to medium-size producers, it bought into the agenda of the international corporations and adopted lines of technology that encouraged and indeed required larger farm units to pay it off (Knuttila and McCrorie, 1980).

The unwillingness or inability of the agrarian middle class to discover or adapt collective strategies that will arrest the trend towards capital concentration is gradually diminishing the very ranks from where radical thought and action once sprung.

It is to be expected that the younger owners of large farm units, many of whom are schooled at universities in an ideology of "competition, enterprise, and business before community ethics" will abandon an older legacy of collective obligations and responsibilities in favour of acquisitive expansion and the specific pursuit of an increased return on capital invested. (On the role of universities in this regard see Taylor, 1994). The so-called rules of the marketplace will supplant the imperatives and obligations of family and community in shaping thought and action.

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Farm Income Support Systems—In Whose Interests? An Examination of Policy Objectives

Ken Jensen

Rural Canada and particularly the Prairie region is suffering a crisis of depopulation. Farm numbers continue to decline and the composition of farms within the numbers continues to change. In recent years we have had a trend toward "residential farms" near the larger urban centres. While some of these are true agricultural endeavours many are not; however, because they carry out some farming they show up as farms in the statistics. While this is positive for the rural social fabric in these concentrated areas, it does little for the larger majority of the rural area. In most of the Prairie region farms are getting fewer and larger, small towns are getting smaller and disappearing, and regional centres are struggling and declining. This presents a problem for people remaining in rural communities because the social and community support systems weaken and eventually break. The size and number of schools, hospitals, stores, other businesses, recreation facilities, churches, and social facilities and events become a problem. The distances people must travel to form a viable community has a major negative impact on the quality of life.

The decrease in farm and rural populations is also an important concern for all Canadians. Food production is an essential part of Canadian society. How that food is produced and who produces it has become a central issue. Having food production spread throughout the country and not concentrated in the hands of a few is surely desirable. Agricultural technology is continuing to change rapidly and many new products and methods are becoming available. In order for our society to meet the opportunities and challenges of the future we will need a rural base of young people with the attitude, culture and knowledge that come from farm and rural backgrounds.

Canadian farm income support systems have a long and varied history. The only characteristic that most programs have had in common is that they have been based on the production of a specific product category or on the acquisition or control of some specified physical input. Typically this has meant that the amount of benefit accruing to any individual farm family depends upon the volume of output or the amount of resource it controls. Thus an individual producer has an incentive to gain control of more of the resource in order to capture more of the subsidy. Two clear examples of such size-based programs have been the transportation subsidies (Crow Rate benefit) and the government share of crop insurance premiums in the Prairie region. In both cases these programs have paid more to larger producers without limit. A farmer seeding 10,000 acres of crop per year may capture $150,000 from these programs while an average-sized farm seeding 750 acres of crop per year would capture about $11,000, with benefits paid for by governments into the two programs.

With these types of differential rewards in the distribution of the government transfers it is important to examine the objectives for making the payments, whether these objectives are being achieved and most importantly, whether these objectives are appropriate to the situation.

Farm Policy Objectives

Farm support payments are part of the overall income that a producer receives and as such are part of the economic incentives which influence decisions and determine the structure of the industry and the fabric of rural communities. Farmers include support payments as one of the variables when making decisions about enterprise selection, asset acquisition, cropping practises, and marketing choices. The availability and amount of potential government payments is often one of the key factors in making these decisions which, in turn, influence the long-term structure of the industry and the fabric of rural communities. Farm support programs cannot be neutral in terms of their impact on decisions; however, some may be less specific than others in terms of the magnitude and direction of the influence (Fulton et al., 1989).

With this in mind, it becomes very important to define the objectives of the support programs and to clearly understand how the size and structure of the programs will influence the achievement of the stated objectives. It is particularly important to consider the possible negative implications of programs that are designed for specific purposes. The objectives of support programs can be sorted into a few general categories.

Income Support Programs

These provide support by lowering the costs of inputs, supporting the price of the product or by making a direct input-based payment. These programs often also have the objective of reducing risk and providing assurances of income and meeting farm costs to aid in planning. A concomitant objective is to protect the value of assets for those in the industry. Programs such as transportation subsidies and the governments' portions of crop insurance premiums fall into this category. Per acre or per animal disaster relief payments would also fit this category. Notwithstanding the fact that the disaster payments have tended to be ad hoc, rational expectations theory would lead one to believe that they may have become equally important as are the ongoing programs in directing decision making. For example farmers may not only consider transport subsides and crop insurance premium subsidies in calculating the potential returns from a land acquisition, but may also consider the potential for receiving other land-based government support payments as future events occur. If this is what has typically happened in the past then it is bound to happen in the future.

The Crow Rate benefit, crop insurance and disaster relief programs have been most important in the Prairie region. These have been aimed at the commodities, or the physical resources used in producing them, in the name of offsetting costs and minimizing income losses. In so doing, these programs have created the side effects of increasing land prices and the incentives to acquire larger production units to capture more of the payments. The same amount of money paid differently could, no doubt, have better accomplished the income support objective without creating the incentive to acquire more of the basic land resource. If payments were channelled to farm people rather than to farm production the outcome in terms of the structure of the industry would be quite different and the objective of income support for the people engaged in primary agriculture would be better accomplished.

Programs to Enhance Efficiency

Another objective of farm subsidy programs has been to encourage efficient production methods and efficiently sized production units. This objective is based on the belief that farms need to be large to have the capacity to acquire cost-saving technology and to produce at an output level that will minimise per unit costs of outputs. It is supposed that the accomplishment of this objective would make producers more competitive internationally and would provide cheaper food domestically. The income objective of the producers is accomplished through small margins on large volumes of sales.

This method of farm support perhaps should not be truly classified as farm income support because it actually benefits consumers through lower prices and resource owners through higher prices for their resources. When paid to individual recipient farms based on commodities, or acreage, size of herd or flock, without limit, such programs will certainly fulfil the objective of increasing farm size. Since Prairie farms are land based this will also mean fewer farms.

Two important questions must be asked. Is it in society's best interest to trade off rural communities and farm numbers for cheaper food production, particularly when a sizeable amount of that production is exported, sometimes at a loss when all costs are included? Further, are larger production units necessary to achieve lower per unit production costs?

The first of these questions is being answered through international trade agreements such as NAFTA and the WTO, which are making it increasingly unacceptable to export production that has had its direct cost reduced through subsidy programs. Additionally, other indirect costs may make food production on a few large farms more expensive than it would appear at first blush. For example, the social costs to communities would likely rise with fewer farms and declining rural populations. Perhaps the environmental costs would also increase. We must ask if this is truly a desirable way of supporting producers when the subsidies are paid on the basis of the level of production. A smarter way of spending the same amount of money is surely possible.

Are large-sized production units necessary for lower per unit production costs and thus desirable in terms of efficient resource use? The assumption that economies of scale exist in primary agricultural production has long been used to justify subsidy programs without a cap on benefits to an individual farm. However, the existence of cost economies in land-based prairie agriculture is difficult to demonstrate for units beyond a very moderate size

(Culver et al., 1991). In addition, if economies truly do exist for larger-sized production units, then subsidies are not needed to encourage the change to larger-sized units because economic forces would cause the change anyway, in the absence of the subsidies.

My understanding of cross-sectional data for Saskatchewan farms suggests that while many very inefficient (high cost per unit) small farms exist, an equally large number of very efficient (low cost per unit) small farms exist. With larger farms, while there is a range of per unit cost at any particular size, this range is much narrower. The highly inefficient larger farms are less likely to exist not because of economies of size but because it is too costly to subsidise inefficiency on a larger farm from other, non-farm income sources. Arguably, for many small-sized farm operations that are simply an "addition" to the operator's true occupation, the need to produce at a low cost level in order to provide an adequate family income is not there. Still, what needs to be recognized is that low cost production can be obtained at any size and that efficiencies or inefficiencies are caused by factors other than the size of the operation.

What then are the incentives for land-based agricultural production units to grow to a larger size? The desire to improve the income of the farm family is a major objective. If per unit positive returns or profits are being generated then the larger size will mean higher income. Thus the existence of positive returns is all that is needed rather than economies of scale to provide the incentive to grow. In fact, as long as returns remain positive, mild diseconomies of scale can exist and growth may still occur.

For several years since the mid-1980s prairie farmers have seen their net returns mostly accounted for by subsidy payments of various types (Elliot, May, 2000). Certainly then the government payments become a key factor in terms of the number and types of farms which exist. If the same amount of money was paid to directly support income rather than being paid on a per unit output or per unit input basis, the result in terms of farm numbers and size would be quite different.

Farmers also wish to expand so they can match the size of their production unit to the new technologies that tend to be available in large-sized, indivisible packages. This primarily applies to machinery and equipment. Policies such as investment tax credits and accelerated write-offs on machinery and equipment have further encouraged farmers to invest in the new technology. In most cases these benefits mainly accrue to large production units because the technology is available only in large sizes and tax reductions provide greater benefits to larger incomes than to smaller incomes.

There are examples of economies associated with larger-scaled operations using large-sized equipment however this does not necessarily imply that large production individual units are needed to gain efficiencies. The same dollar amounts of subsidy or tax reduction could be applied to encourage shared ownership, machinery rental pools and the development of appropriately sized technology for smaller operations. The same level of expenditure, directed differently could have a vastly different effect. It is not necessarily true that the large equipment has been produced in response to the needs of farmers but rather, to some extent at least, the structure of primary agriculture has changed in response to the availability of large equipment and in some cases only large equipment.

Programs to Encourage New Farms

This objective intends to encourage new entrants into farming and increase the number of people engaged in primary agriculture. Rebuilding rural communities is another way of stating this objective. While this is often a stated objective of policy makers, examination of actual policies reveals that it is seldom an objective that receives serious consideration in their construction. Whether this is intended or the result of misunderstanding the outcomes, few significantly funded farm programs of the past have directed the farming industry toward the development of stronger, more populated rural communities. In most cases, efforts in this direction have been attempts to offset the results of the highly funded programs, which have encouraged larger and fewer farms. For example, low interest loan programs for young beginning farmers attempt to level the playing field for those outside the industry in competing for basic resources with those who are inside the industry and receiving the subsidies associated with the resources they already control. But these policies are at cross-purposes. Resource-based subsidies push up the cost of the resource and make it desirable to own more while the low interest rate attempts to offset this effect for some.

Are encouraging more farmers and developing rural communities worthwhile and feasible objectives? Our answer depends on answering several other important questions. Can small and moderately sized farms produce in a cost-efficient manner and provide an acceptable level of family income without increasing the level of support to agriculture? Is farming a valuable occupation? Should rural people and society at large have viable rural communities?

As I argued above, it is possible to produce agricultural products at least as cheaply on small to moderately sized units as on large-sized units. Furthermore, the costs of farming to society—costs which presently are often not accounted for or are considered "externalities" —may well be higher for larger-sized farms. Obviously, by spreading farm support payments more evenly, income support could be provided for a larger number of people than it is with the use of resource-based support payments. Projections using the actual number of dollars in agricultural support programs can easily be made.

I believe farming is clearly desirable both for the individuals involved in farming and for the larger society. The manager-worker embodied in the same person that is the common situation in small- and moderate-scale family farming has a number of economic and human advantages. Frederic Herzberg and others have talked for years about motivators in the work environment. Herzberg indicates that motivators are job conditions that allow the worker to be fulfilled through the work experience. Workers that experience meaningfulness from their work and fulfill self-esteem and self-actualisation needs through their work are satisfied and motivated. They receive a good deal of "psychic income" from the job. Work situations that have these characteristics are termed "enriched jobs." Owner-operated family farms can offer enriched jobs in the situation where the chance of being successful and economically viable is reasonably high. However, farm work is only enriched for farm decision-makers (i.e., the manager) and seldom for farm workers. Many people dream of being a farmer, few dream of being a farm worker.

Enriched workers are motivated and thus more productive. They are not concerned with watching the time clock and counting the hours; however, they are concerned with being able to produce a decent annual income.

The internal flow of information to the decision maker is crucial for good decisions. The small family operation accomplishes this and this above all gives the small operation an advantage in terms of flexibility in using the diverse resources associated with Prairie agriculture. A decided disadvantage for smaller operations exists in acquiring information to deal with the external environment. Government programs have assisted with this in the past and if a large number of farms are deemed to be desirable these programs could do much more in the future.

Evidence of this type of assistance has recently been demonstrated by Kraft, Furtan and Tyrchniewicz in their study showing the benefits of the Canadian Wheat Board to Prairie grain producers in marketing their crops. This is an external environmental factor that the small producer would have a cost and information disadvantage in dealing with on his/her own.

The better decisions and higher responsiveness on the part of the manager-operator leads to more diversification and more value added through resident resources particularly labour. This phenomenon is so powerful that it has resisted the policy and technological biases that have favoured large operations over the past many years. The fact that the industry is dominated by family-sized operations rather than land-extensive operations is ample evidence.

Conclusion

The clarification of objectives to be accomplished through farm support programs is an important first step in designing the programs. In a country with ongoing unemployment problems why would we want to spend scarce tax money to aid in the process of rural depopulation? If it is desirable to provide employment opportunities in rural areas then farm support programs must be designed to complement this purpose. Many programs in the past have worked at cross-purposes to the stated objectives. This is due to a poor understanding of the incentives that determine the structure of the industry as well as the need to achieve short-term objectives while appearing friendly to certain voter groups.

The perceived need to make farm support programs universal and the tendency to direct support towards commodities and resources rather than people has interfered with the development of programs which could promote the retention of people in rural areas and the development of communities. A change to a focus on people-based income support programs in the development of farm support is needed to allow the programs to assist in the process of developing rural communities.

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Workers' Health and Safety: Local Knowledge and Control[1]

Adriane Paavo

Workers suffer from the same undervaluing of their inherited and inherent knowledge, in this case of their workplaces and their trades or occupations, as farmers do. Over the centuries, workers have struggled to retain control over specialised and essential work knowledge as a way to secure their incomes and counterbalance the power of their employers. Craft guilds are a good example of the successful implementation of this strategy. In recent years, workers and their unions have battled against "deskilling" and other forms of breaking jobs down into their component parts, robbing workers of any discretion, creativity, and control over the pace and method of work.

Our era's fascination with things scientific has contributed to another loss of worker control and knowledge. By turning over the definition and monitoring of workplace safety to experts (in "risk management" or health "claims management" or other buzzword categories), we are forgetting that workers' practical knowledge of their everyday experiences is as valid as the scientific knowledge of distant, "objective" experts. This is more than a theoretical concern. To protect their health and safety, workers must have adequate knowledge and control of their work. And workers need a legitimate structure or vehicle through which this knowledge can be discussed, developed, and applied to potentially harmful working conditions. This was, and still is, the basis of Saskatchewan's Occupational Health and Safety Act, made law in 1971. It enshrined workers' right to know about hazards in their workplace, their right to participate in discussions and decisions about their working conditions, and their right to refuse to perform dangerous work, the ultimate form of control. Unions must continually open and defend this space where workers can build and share this knowledge.

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[1] Dedicated to the many Mozambicans and Canadians whose work and dedication to the Mozambique Occupational Health and Safety Project provides the inspiration and information for this article. Adriane Paavo is a staff representative with the Grain Services Union. In the early 1990s she spent two and a half years in Mozambique supporting solidarity projects between Mozambican and Canadian workers, in particular GSU's Mozambique Occupational Health and Safety Project.

The pressures to degrade work, and so to jeopardise workers' health and safety, are not limited to Saskatchewan workers. Indeed, they are worldwide, as is the reach of many of the world's largest employers.

The purpose of this presentation is to describe the methodology used in an occupational health and safety training project that the Grain Services Union has developed with unions in the southern African country of Mozambique. I offer it as a strategy for building resistance to the threats to work and to workers' health and safety. Although it is a program initiated by wage workers and focusing on, although not limited to, factory work, I want to suggest that it may offer a strategic alternative for farm people who would resist unhealthy aspects of their work as well.

Project Background

The Grain Services Union (GSU) has been organising and representing agriculture-industry workers since the 1930s. It began as an association of the employees of the Saskatchewan Wheat Pool. Today it represents approximately 3,000 members who work in Western Canada's grain elevators, farm service centres, grain company offices, mills, hog farms, fish farms, farm newspapers, grain terminals, and other related enterprises.

It will not surprise anyone who has worked on a farm or in a grain elevator or mill that grain handling is a dusty business. That dust not only settles on skin and clothes, it also enters the lungs and can cause serious, debilitating health problems. For this reason, the GSU worked for decades to convince employers and the two levels of government to acknowledge the truth of what grain workers were saying: that exposure to grain dust was hazardous and, in some cases, caused career-ending respiratory illnesses. Experts at the time disregarded this first-hand experience; for them, grain workers were suffering the results of years of smoking cigarettes. It took more than 40 years of work on the part of the GSU and other unions—lobbying, arguing, speaking at conferences, haranguing, writing letters—before government did recognise grain dust–related illnesses and injuries as compensable injuries.

The dust extraction equipment in elevators today is a result of the work the Union did. Both the equipment installation and the changes in Workers' Compensation Board policy were important victories for workers. They were admissions that workers had been right all along. Throughout Canada, worker's compensation boards pay disability benefits to workers who are temporarily or permanently prevented from working as a result of work-related injuries; these payments come from premiums collected from all employers with a minimum number of workers. Paying compensation benefits for grain dust–related illnesses meant these government agencies accept that the workplace caused these illnesses, not lifestyle choices or other sources, in the same way a broken leg resulting from a fall at work makes a worker eligible for worker's compensation benefits.

Health problems have not disappeared, however. Back injuries result from lifting and heavy physical labour. Illness results from exposure to chemicals. Stress may not seem a common hazard for people who are physically active. But, in fact, grain-industry workers often speak of stress related to long working hours, working alone in isolated locations, and feeling a lack of control over their work environment. Within Saskatchewan Wheat Pool alone in 1993, there were 1,125 days lost to injury. The true picture is undoubtedly grimmer, because workers will often work while they are injured, either of their own volition or under pressure from the employer.

Health and safety continues to be an area in which the GSU is active. In the early 1980s, a Saskatchewan trade unionist working in Mozambique observed the working conditions in some factories in the capital city of one of the world's poorest countries. He knew that the GSU had been active in anti-apartheid and solidarity work, as well as health and safety, and approached the Union with the idea of setting up a joint occupational health and safety project with a Mozambican union.

Since an initial visit by a GSU delegation to Mozambique in 1986, the project has grown and developed. Today, a staff of seven Mozambicans work out of a training and information centre in the capital city, Maputo. They have trained over 259 local union committee members in 29 work sites in southern and central Mozambique. The committees' work has benefited more than 16,000 union members.

Project Methodology

Since 1985, the Grain Services Union and its counterpart SINTIAB (the Mozambican Food and Beverage Industry Workers Union) have been developing this project, which is based on four beliefs or principles:

> 1. Workers themselves are good judges of what is dangerous in the workplace and what is safe. We are in the workplace every day and do not need to rely only on the information of experts or management.
>
> 2. Problems must be resolved at their source. It is not enough to only use protective equipment and let the dangerous condition remain. Accidents and illnesses must be prevented, not simply cured.
>
> 3. Our health is not for sale. We work to live and so do not want to die at work. No danger bonus can compensate for the loss of life or good health, and, therefore, payments of this sort must not take the place of effective prevention.
>
> 4. Workers should not delegate responsibility for our health to others. By organising and working together, we can defend and improve our working conditions.

The project aims to help workers analyse workplace safety, question what is wrong, propose solutions, and work together to make changes they feel are necessary. This experience also helps workers bargain better for wages, job security, and other benefits. It helps make us better citizens, too. The methodology has applications well beyond the issue of occupational health and safety and beyond the workplace.

The key point is the knowledge and experience that people gain through work, through their experience of living. Wherever it is that one works—in a house, around farm machinery, in an office or factory or elevator—knowledge is gained about the work process and environment. A worker knows which activities, tools, or equipment are going to cause headaches or back strain, which have resulted in cuts or broken bones, or which have provoked allergies. This knowledge comes through the experience of doing the job. An outsider can know bits and pieces of that experience but they simply cannot know as much about the hazards of the work environment as an integrated whole as those people who spend most of their waking hours there.

The occupational health and safety project and its methodology do not try to "give" workers skills and knowledge as much as they try to build on the skills and knowledge that workers already possess. The reality is that many workers simply do not have confidence in themselves and in their own experiences. No one may have ever asked them for their opinions. No one may have ever listened to what they had to say.

"Uncredentialed" workers face the dangers of professionalism every day in the form of comments from managers that belittle their knowledge and experience. Those who work in the union movement do not tend to belittle workers' knowledge; but because it is our job to do things for people, the tendency can be to start to take over and do what should still be done through people's initiative, to facilitate action.[2]

Following the project's methodology, a Mozambican workplace is assessed and identified as an appropriate site to establish a workplace health and safety committee. Project trainers and local union officers identify workers in that work site who have an interest in health and safety or who have some past experience as activists. With the support of the trainers, the committee will carry out a series of inspections in the workplace and will interview co-workers.

On the basis of the inspections, interviews, and their own knowledge and experience of working in that factory, committee members will literally map out where the hazards are. This simple, practical process involves having a diagram of each section of the workplace and drawing in workers' testimony: there is a real problem with noise here, there is steam escaping from a machine and several workers have been scalded here, it's a very hot place to work right here. This process helps identify what are the main or common hazards throughout the workplace. It may be that every section is hot and noisy. Or there may be certain priority problems that should be solved first. The committee will sit down and brainstorm solutions to these problems. In some cases solutions can be very simple adjustments to machinery or to work processes. The implementation may be as a result of management co-operation or of collective bargaining or other forms of worker action. But the identification and analysis of risks is ongoing because the workplace is always undergoing changes. The work of the committee can also be supplemented with educational activities.[3]

Wider Relevance and Application

The experience of this project has relevance beyond the trade union movement. In the first place, the methodology that we have set out is appropriate for workers, farmers, and all people who live and work in rural communities. It is an appropriate strategy for any group of people who want to make changes in their working environment, or take action on any other economic, social or political issue. The methodology is not specific to a certain kind of problem but rather aims at building people's confidence in, and self-recognition of, their own ability to analyse and critique their environments.

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2. For a discussion of respect for workers' knowledge and experience, see Robert Sass, 1998. Sass shows how workers' health and safety is fundamentally connected to their knowledge and even the language of occupational health and safety discourse is biased against workers' knowledge.

3. A variation on the concept of risk mapping is body mapping. On large pieces of paper, workers draw an outline of their bodies, and then mark places where they experience pain, discomfort, or injury at work. By looking at the maps of workers in the same areas or work sites, common and recurring problems can be discovered. As well, with this process, it is not necessary to be able to name or "properly" classify an injury or health problem, only to say where it hurts.

Secondly, there is a close connection between sustainable communities and sustainable economic activity. If there is no activity at which people can safely and in good health earn an income, it is difficult to maintain a community. If a community does not have people committed to its continuity, it cannot maintain sustainable economic activity. That ties closely with the concept of health in the workplace. Being healthy is not just a case of being free from injury and disease. Many other factors make up the concept of health: standard of living, the wage or the income received from work, the benefits a person receives through their work, and the good mental health and validation that can come from working in an environment free from harassment, that allows workers to take initiative and have control over decisions. While the union movement has its own share of contradictions in this regard, it does aim to gain its members a say in the decisions and processes that affect them and to impose some elements of democracy where otherwise little would exist.

The methodology of the health and safety project also works to give people control over the conditions that they work under and over the processes that affect them on a daily basis. Both inside and outside the workplace, unions and other progressive organisations can ensure people have the political space to exercise control in building healthy lives, as we define those to be.[4]

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[4] The Grain Services Union has materials available which explain the Mozambique Occupational Health and Safety Project, including a nine-minute video describing the project's methodology. Copies of the video are available for borrowing, free of charge, from the GSU office, 2334 McIntyre Street, Regina, SK, S4P 2S2. Staff of the project in Mozambique can be contacted directly by e-mail at cedesset@virconn.com. Be advised that there are problems with the server at times.

Index

A
Aboriginal peoples, 59, 73, 141, 317
Academic organisations, 31, 38, 40
  See also Universities
Accutrak Systems Ltd., 261
Act of Saskatchewan (1948), 247
Agrarian movement, 55, 219, 244, 296, 324-5
AgrEvo (company), 213, 307, 315
Agribusiness, 4, 10, 31, 40, 63, 107, 139, 232, 259, 269-70, 277, 283, 303-9, 312-3, 318, 325
  and weed science, 211, 216
  See also Agriculture
Agricore Co-operative Ltd., 313
Agricultural chemicals (AgChems), 9, 36-7, 72, 214, 216, 218, 220
  2,4-D, 210-1, 213, 215-7, 219, 221
  contributing to deskilling, 207, 221
  and corporate sector, 213
  for crop protection, 219
  effect on environment, health, 217
  investment in research and development, 208
  MCPA, 215, 219, 221
  rise in relation to capitalism, 209-10, 218
  sales of, 211
  and wheat growing, 221
Agricultural Credit Corporation of Saskatchewan, 314
Agricultural Fair Practices Act, 307
Agricultural Institute of Management (AIMS), 115
Agricultural Rehabilitation and Development Act, 298
Agricultural science
  to increase farm production, 211, 214-5, 217
  role of state in, 214
  technology in, 217, 329, 332
Agricultural sector, 10, 29, 31, 36, 50, 61, 168
  and global capitalism, 290
  herbicides in, 212
  policy, federal, 296, 298-300
  relation to Canadian economy, 289-90
  research in, 266, 300
  See also Agribusiness, Agriculture
Agricultural Technology and Family Farm Institute (Nebraska), 185
Agriculture, 8, 46, 56, 112, 116, 144, 150, 307
  alternative approaches to, 234
  and capitalism, 10, 209
  as a career choice, 95-7
  conventional, 9, 224, 228-30, 232-3
  crisis in, 70, 72, 88-9, 167
  culture of, 7, 10, 62, 80
  deskilling of labour in, 6
  and economy, 10, 70, 74
  effect on environment, 224, 227, 233
  fossil fuels in, 224-5, 262, 316
  industrialisation of, 62, 306-7
  and organic farming, 9, 63, 223, 227-8, 230, 232-3, 319
  skill trends in, 15, 20
  structural issues in, 119, 129-30, 153, 157, 159, 163
  sustainability in, 7, 9-10, 223, 226-8, 233-4, 264, 267, 269, 277, 282, 315, 319
  technology in, 32, 126
  See also Farming, Farming practices, Farm production
Agriculture Canada Research station (Saskatoon), 47
Agrochemicals, See Agricultural chemicals
Agroecology, 226
Agronomic practices, 38
Ag-West Biotech Inc., 315
Alberta Wheat Pool, 246, 313, 325-6
American Chemical and Paint (ACP), 211, 213
American Farmers' Union, 249
American Home Products (company), 213
Amicus Brief, 319
Anderson, F.W., 197
Andre, Harvie, 78
Animals
  confinement management of, 238, 240
  as game, wild species, 237-40
  in sustainable production, 240, 304
Apprenticeships, 24
Archer Daniels Midland (ADM), 305, 312, 318, 325
Argue, Greg, 9, 37
Arnason, B.N., 246
Atkinson, Roy, 10
Atomic Energy Commission, 220
Avonlea subdivision (Sask), 197-8, 200-1, 203

B
Babbage, Charles, 21
Bain, Joe S., 305
Bank of Canada, 81, 84
Bank, land, 88
Baran, Paul, 290, 293
Barber Commission, 251-3, 255
BASF Canada, 209, 213, 315
Bayer (company), 213
Beechy co-op farm, 166
Beingessner, Paul, 9
Bell, Daniel, 17
Bennett, George, 246
Berggren, C.
  TINA principle, 27
Berry, Wendell, 226

Beus, C., 282
Big Sky Farms, 314
Biodiversity Convention, 317
Biotechnology, 3, 306-7, 312, 315-8
Blakeney, Allan, 147, 154-5, 161, 311, 327
Blauner, Robert, 17
Blundall, D., 124
Blundall, J., 124
Board of Grain Commissioners, 297
Board of Transport Commissioners, 198
Bonneau, Barb
  Rural Dignity, 77-9
Bouchard, Benoit, 203
Bourdieu, Pierre, 94
Braverman, Harry, 7, 17, 21, 23, 26, 28, 32, 41
  analysis of Taylorism, 25
  analysis of valorisation, 24
  deskilling hypothesis, 6
  Labour and Monopoly Capital, 20, 22
Brett Woods Conference, 293
Bright, James, 23
  Bright's index, 23-4
British Columbia Biotechnology Circle, 318
Brown, John B. (Jock) (Manitoba), 247, 251-4
Brown, Lorne, 311-2
Bunge (company), 305
Burnell, Colin (Manitoba), 246
Burns Foods, 313
Burston-Marstellar (company), 317
Busch, Laurence, 7
Butala, Sharon
  farming way of life, 7
  The Fourth Archangel, 72

C

Campaign for Food Safety, The, 318
Canada Post, 78
Canada Works, 78
Canada-U.S. Free Trade Agreement (CUSTA), 308, 312-3
Canadian agricultural research stations, 215
Canadian Coalition for Agricultural Safety and Rural Health, 128
Canadian Commonwealth Federation (CCF), See Regina Manifesto
Canadian Co-operative Implements Ltd. (CCIL), 9, 244, 252, 254-6, 324-5, 327
  manufacturing experience, 247–51, 253
  origins of, 245-6
Canadian Environmental Law Association, 318
Canadian Environmental Network, 318
Canadian Federation of Farm Equipment Dealers, 252
Canadian Food Inspection Agency, 307
Canadian Food Processors Association, 312
Canadian Meat Council, 312
Canadian National Farmers Union, 319
Canadian National Railway (CNR), 194, 197-8, 200, 203
Canadian Northern Railway Company, 196
Canadian Pacific Railway (CPR), 140, 194, 197-200
Canadian post offices, rural, 77-8
Canadian Special Committee on Farm Implement Prices (1937), 245
Canadian Transport Commission (CTC), 197-9, 202
  Review Committee, 198
Canadian Trucking Association, 200
Canadian Wheat Board, 82, 89, 192, 199, 298, 300, 311-2, 324-6
  Permit Book, 171
Canadian Wheat Pool, 114
CanAmera Foods, 313
Canola, 315-6
  as agricultural commodity, 49-50
  development of, 46, 48-9
  genetically modified (GM), 3, 220-1
  as oilseed crop, 7, 46-9
  production of, 137
  Roundup ready, 316
Capital, transnational, 82
Capitalism, 16, 41, 243, 304
  alienation under, 6
  competitive, 293, 303
  critique of, 323
  development of, 291-3, 300-1, 303, 307
  effect on labour, 6, 32, 39
  markets of, 167
  private property under, 292
  as world system, 290, 292, 294-5, 297-9
Cargill (company), 305, 308, 312-3, 319, 326
Carlson, Elmer, 247
Caro, Nikoden (Germany), 209
Catholic Rural Life Committee, 113
Cattlemen's Legal Fund, 319
CB Dodge Company (USA), 213
Central Western Railway Corporation, 195
Chayanov, A.V., 34
Chemical fertilisers, 36, 231, 233-4, 271, 273, 276, 304, 307, 309, 317
Chemical herbicides, 208, 220-1, 262-3
Chemical pesticides, 271, 273, 281, 304, 309, 316-7
Chemical technologies, 214-5, 217-9
Chemicals, agricultural, See Agricultural chemicals
Chretien, Prime Minister Jean, 82
Christian Farm Crisis Action Committee, 109-10, 112, 115
Chromatograph, 47
Clinton, President William J., 82
Clough, S.B., 290-2
Coalition for Environmental Protection, 314
Coalition for the Protection of the Environment, 319
Cockshutt (company), 248, 250-3
Codex Alimentarious Commission (Rome), 308, 312
Coldwell, M.J., 151, 256
Cole, C.W., 290-2
Colony subdivision (Sask), 197-201, 203
Communities, agricultural, See Farm communities

Community (gemeinschaft), 80, 82-4, 86
Community Based Land Trusts (CBLT), 115
Community building, 79, 85, 87-9
Community Land Trust Research Project Team, 114
Community land trusts, 114
ConAgra company, 305, 308, 312
Consumers International, 318
Continuous flow techniques, 17-8
Continuous Improvement (kaizen), 23, 26-7
Control (farmers'), 32-5
Co-op Fédérée (Quebec), 252
Co-op Refinery, 244, 246, 251
Co-operative Commonwealth Federation (CCF), 151, 166, 311
Co-operatives
  failure to challenge competition, 9
  for farm machinery, 244, 255-6
  marketing through, 245
  principles of ownership of, 247
  as socialist alternative, 243, 256
  See also Farm co-operatives, Saskatchewan farm co-operatives
Cooperatives, local, 89
Cooperatives, non-equity, 8
Cooperstock, Henry, 166
Corman, J., 28
Corn Laws, repeal of, 291
Corn Producers Association, 277
Corporations
  control of agricultural markets, 36-7, 40
  control of decision-making process, 40
  control over farm labour, 40-1
  and research interests, 38-9
  supported by state, 40-1
Corporations, transnational, 84
County Conservation Authority, 276
Countrymark Co-op, 312
Cowley, Elwood, 154
Craig, Burton, 47
Credit Union Central of Saskatchewan, 146
Crop Development Centre, The, 315
Crop Insurance Act (1959), 298
Crop production, 100-1, 304
Crop rotation, 304, 316
Crop specialisation, 42, 304
Crosbie, John, 202
Crow Rate benefit, 193, 200, 300, 330-1
Crown Land Assembly, 154
Crown Life Insurance, 147
Crow's Nest Pass Grain Rates, 142, 325
Crowsnest Pass Agreement, 192, 194, 196
Cultural practices, See Farming practices
Cunningham, Darrel, 314
Currie, Bev, 8
Cushon, Ian, 9

D
Danes, S.M., 125
Danielson, Dan, 160
Davidson Craik Farm and Town Self-help Group, 112
Delta and Pine Land Company, 307
Democracy
  and politics of resistance, 87, 89
Deskilling, 20, 24, 28, 207, 221, 335
Deskilling hypothesis, 6-7
Devine, Dan, 161
Devine, Grant, 110, 191, 315, 327
Diaz, Polo, 7-9, 92
Diversity (cultural), 56-8, 62
Dohse, K., 27
Dominion Companies Act, 247
Dominion Experimental Farms, 216, 219
Dominion Lands Act (1870), 8, 72, 140-2, 150
  private ownership of land, 324
Douglas, T.C., 152, 154
Dow AgroSciences (company), 213, 307, 315
Dow Elanco (company), 214
Downey, Keith, 47
Dreyfus, Louis, 312
Dunlap, R., 282
Duplex Machinery Company (USA), 249
Dupont (company), 213, 307
Dyck, Ron, 109

E
Earthcare, 227
Earthcare: Ecological Agriculture in Saskatchewan, 227
Ecological development, 59
Economic development
  in rural communities, 59, 61
Ecumenical Conference of Bishops, 111
Edmonton Journal, 109
Education (farmers'), 95
Environmental Assessment Act, 314
Environmental Defence Fund, 318
Environmental problems, 42
Environmental sustainability, 55, 58
Environmentalists, 317
Ethyl Gas Corporation, 249
European Farmers Co-ordination, 318

F
Fai-Fang Group (Taiwan), 313
Fairbairn, Garry, 218
Faller, Doug, 9, 36, 41
Family farms, 141, 144, 146, 150, 160, 163, 260, 330
  assets in land, 145, 167
  computer technology in, 260, 265-6
  crisis in, 137, 146
  crop diversity in, 304
  debt load of, 225, 268
  dependence on off-farm income, 225
  farm production, 26-8, 138-9, 141, 143, 225, 304
  farmer retirement, 154, 156, 158, 160-1, 167, 170, 172, 174
  immigrant owners, 219, 324

  intergenerational transfer of, 124, 137, 142, 145-6, 149-50, 159-61, 167-8, 171-2
  land leases in, 150-3, 155-6, 158-9, 161
  land tenure system, 140, 147, 150, 167, 172
  private ownership of, 150-1, 153, 218, 304, 323-4
  profitability of, 268
  public ownership of, 153, 155, 158
  size of, 219, 225, 268, 270, 289
  specialized operations on, 35-6, 139, 144, 146-7
  women's role on, 138, 143, 145
  See also Farm families; Saskatchewan, farms
Family Foundation, 115
Farben, I.G. (company) (Germany), 209
Farm activists, 5, 8
Farm Bill (Nebraska) (1990), 177, 184
Farm communities, 4-5, 91
  co-operation in, 111
  disintegration of, 97
  intergenerational transfer of land, 111, 114
  knowledge in, 92
  land tenure in, 111
  local control for, 111
  sustainability of, 55-6, 60, 112-3, 116
  See also Rural communities, Family farms
Farm co-operatives, 33, 49, 60, 131, 244, 319
  consumer co-operatives, 165
  grain handling co-operatives, 165, 169
  grazing co-operatives, 165
  machinery co-operatives, 165-6, 168
  marketing co-operatives, 165
  non-equity model, 170-2
  production co-operatives, 165, 169
  See also Saskatchewan farm co-operatives
Farm Credit Act, 108
Farm Credit Corporation (FCC), 87-8, 108, 113, 115, 161, 298
Farm crisis, 79, 87, 89, 107-9, 111, 129, 137, 141, 146, 153
  causes of, 107-8
  farmers' resistance to, 116
  stress of, 8
Farm debt, 87, 110, 112-3, 142
Farm Debt Advisory Committee, 114, 310
Farm Debt Review Board, 108, 114-5
Farm debt review process, 87
Farm decisions
  sons' involvement in, 278-9
  wives' involvement in, 279, 281-3
Farm families, 8, 10, 40, 72,103,130, 226
  crisis intervention in, 115
  distress in, 107, 109, 113, 115-6, 124-5
  resettlement of, 152
  stressors of, 124, 125-6, 128, 289
  violence in, 108
  women's roles in, 125, 127, 139-40, 145
  young peoples' futures, 91
  See also Family farms, Young people
Farm finance, 87
Farm foreclosures, 108, 110-3, 115, 125, 130, 151-2
Farm Improvement Loan Act 1944), 298
Farm income problem, 49
Farm income support systems, 329-31, 333
Farm inventiveness, 36
Farm labour, See Labour
Farm land
  purchase of, 88
  Crown leases for, 167
Farm Land Security Board, The, 108
Farm life, 74, 84
Farm loss, 125
Farm machinery, 9-10, 72, 309
  distribution of, 243, 252, 254
  as industry, 247, 249-52, 254, 256, 325, 327
  manufacturing of, 243
Farm management
  use of technology, 272
Farm markets, See Markets
Farm navigation system, electronic, 261-2
Farm operators, 105, 116, 119, 123, 125-6, 139
Farm production, 10, 34, 152
  as capitalist enterprise, 34
  machinery use in, 144
  processes of, 36-7, 92
  technological dependency of, 35, 40
  See also Agribusiness, Agriculture
Farm program payments, 72
Farm Purchase Program, 161
Farm rallies, 114, 116
Farm skills, See Skills
Farm stress, 8, 120-2
  effects on women, 127
  coping strategies for, 121, 123, 128
  stressors of, 122-3, 127-8
  transactional model of, 120, 123, 128, 130
Farm Stress Line (toll-free), 115, 130
Farm Stress Management Program, 115
Farm Stress Unit, 115
Farm subsidy programs, 331
Farm support payments, 330
Farm technology, 126, 129, 139, 207
Farm Tenure Arbitration Board, 114
Farm Union, 327
Farm women, See Farm families, women's roles
Farmers
  alcoholism among, 108
  and branch line railways issue, 9, 203
  construction of knowledge by, 269-72, 278, 282-3
  control of work by, 42, 220-1, 335
  decision-making process of, 40, 82, 269, 271
  incidences of depression, illness, 108
  knowledge and skills of, 31, 35, 268-9, 273-5, 283, 335
  and markets, 35, 37
  resistance to farm crisis, 116

  specialised knowledge of, 220-1
  stress management for, 109, 115
  subjugated through technology, 40
  suicides among, 108-9
  See also Farm families, Knowledge, Control
Farmers Home Administration (Nebraska), 177
Farmers For Justice, 311
Farmers' markets, See Markets
Farmers' unions, See Trade union movement
Farmers, young, See Young people, as farmers
Farming, 4, 7, 9, 11, 98, 107, 109, 123
  crisis in and globalization, 5, 8, 107
  distress in, 119, 123, 126, 128-9
  environmental awareness in, 74
  as hazardous occupation, 126
  industrialisation of, 306
  interlocking nature with home, 123-4
  mechanisation of, 223
  non-chemical fertilizers, pesticides, 224, 228, 230-1, 233
  specialised farms, 25-6, 223
  stress in, 107, 120, 129, 131
  structural changes in, 119, 131
  technology in, 73, 107
  See also Family farms
Farming, anti-corporate, 318
Farming, corporate, 320
Farming, mixed (polycultures), 260, 263, 266
Farming, monoculture, 260, 263-4
Farming, organic, 9, 42, 62, 219
Farming practices
  conservation tillage, 267, 269-70, 273, 276-7, 283
  conventional, 267, 270, 274, 282
  crop rotation, 219, 221, 229
  environmental issues in, 271, 281, 283
  mechanisation, 298
  no-till methods, 268, 270, 272–83
  organic farming, 270-1, 273, 275-7, 281-3
  scientific, 217-9
  summerfallowing, 207, 219-21
  sustainable, 267-8, 274, 277, 279, 282
  tillage practices, 267-8, 270, 273, 275-6
  trial plots of new practices, 271, 275
  for weed control, 208
  See also Farming techniques
Farming techniques, 259-60, 263
  automated, 261, 263-6
  chemicals and fertilisers, 260, 263
  environmental concerns in, 260
  See also Farming practices
Farm-Labour Group, 151
Farmland Industries, 308
Farms, See Family Farms
Farms, experimental, 31, 40, 210, 214, 297
Farms, residential, 329
Federal Cooperatives, 146
Federated Co-operatives Limited, 89, 324
Federation of Production Associations Act, 168
Federation of Production Co-operatives (FOPC), 167-72
Feldman, S., 269, 282
Fertilisers, inorganic, *See* Chemical fertilisers
Financial Post, The, 113
Florida, R., 26
Food distribution system, 227, 232, 304, 320
Food, organically grown, 264, 319
Food processing industry, 303, 305-6, 308
Fordism, 25-7
Fossil fuels, See Agriculture, fossil fuels
Fowke, Vernon, 289
Fowler, Harry L. (Sask), 246-7, 249, 251, 254-5
Free trade, 307, 320
Friedmann, Harriet, 298, 304
Furtan, Hartley, 334

G
Gainers Plant (Edmonton), 313
Game farming, See Animals
General Agreement on Trade and Tariffs (GATT), 72, 115, 294, 300, 308
General Electric Corporation
  Mohan Chakravarty, 306
Gender
  and division of farm labour, 92
Genetic Resources Action International (GRAIN), 318
Genetically engineered foods, 315, 319
Gerrard, Nikki, 130
Gertler, Michael, 7
Gidluck, Lynn, 8, 147, 168
Global Positioning System (GPS), 261
Globalisation, 8, 107, 113, 116, 296, 299, 301
  effects on farmers, 128
  as eroding community, 81-2, 84-5, 89
  ethics of, 85
  and farm life, 79, 81, 88-9
  and markets, 86
Globe and Mail, The, 311
Goldberg, Ray, 303
Gordon, Elizabeth, 126
Government of Canada Experimental Farm Service, 216
Grain companies, 131
Grain elevator system, 312
Grain farming, 140
Grain Futures Act (1939), 297
Grain Growers Grain Companies (now UGG), 165, 324
Grain Growers Guide, 217
Grain handling industry, 313
  health problems in, 336
Grain Handling and Transportation Commission, 196
Grain industry, 191, 201, 309
Grain Inspection, Packers and Stockyards Administration, 305
Grain marketing, 151, 160, 243

Great Plains Symposium (1994), 225
Grain prices, 202
Grain production, 197, 214
Grain Services Union (GSU), 336-7
Grain Transport Agency, 113
Grain Transportation Agency, 200
Grain transportation system, 193, 196, 199-200
Gramsci, Antonio, 41, 83
Grand Trunk Pacific Railway, 140
Grant, George, 290, 295, 300
Great Northern Railway, 140
Grocery Products Manufacturers of Canada, 312
Gruchow, Paul, 56
Guide to Farm Practice in Saskatchewan, The, 208
Gustafson, Len, 198-9, 203

H
Hall, Alan, 10
Hall Commission (1977), 198
Hall, Justice Emmett, 196-7
Hamm, W., 291-2
Hardy, Professor E., 246
Harmony Industrial Society
  Harmona colony, 165
Harvey, Bryan, 47
Heffernan, William, 305
Hegel, G.W.F., 83
Heilbroner, Robert, 290-1, 293
Hehn, Lorne, 312
Herzberg, Frederic, 333
Hirschhorn, L., 19
Hislop, Markham W., 41
Hodgins, Grant, 202
Hoechst (company) (Germany), 214
Hog farms, 315, 318
Homestead Act (1862), 140
Homesteading, 125, 140-1, 150, 152, 325
Hope, Bill, 158
Howard, Sir Albert, 227
Hudson's Bay Company, 141
Hudson's Bay Railroad, 325
Humane Farming Association, 318
Hunt, E.K., 290-2
Hutterite farms, 4, 62, 146
Huxley, C., 27

I
IBP (company), 308, 313, 319
Identity-Preserved Products, 306
Imperial Chemicals Industries, 215
Indigenous Peoples' Biodiversity Network, 318
Industrial agriculture, 305, 316, 319
Industrial development, 295-6, 301, 319
Industrial food system, 305, 307, 317, 319
Industrial re-engineering, 28
Innovation Place, 315
Institute for Sustainable Development, 318
Intellectual property rights, 49, 308
Intellectual Property Rights Committee (USA), 308
Intercontinental Packers (Saskatoon), 313-4
Interchurch Committee on Agriculture, 110-1, 115, 146
International Agriculture Network, 146
International Federation of Organic Agriculture Movements, The (IFOAM), 226
International Harvester, 248
International Monetary Fund, 294, 300
International Rapeseed Conference (1970), 47
Irrigation, 304
Isern, Thomas D., 41

J
Jaffe, JoAnn, 8
Jealotts Hill Agricultural Research Station (England), 215
Jensen, Ken, 10
John Deere (company), 248, 310
Johnson, Joy, 9
Johnson, R.A., 248
Journal of the American Chemical Society, 213

K
Katerynych, Wayne, 108
Kenney, M., 26
Keynesian macroeconomics, 25
Kirkpatrick, Frank, 84
Kloppenburg, Jr., J., 269
Kneen, Brewster, 315
Knowledge, 17, 32-5, 37, 41, 57, 91, 99, 102, 145
  bifurcation of, 37-8
  construction of, 167
  institutionality of, 102-3, 105
  production of, 97-8, 102-3
  rationality of administration of, 37-9, 42
  reproduction of, 97-8, 102-3
  structure of, 98-9, 103
  See also Farmers, knowledge and skills
Knowledge, common, 37, 39
Knowledge, scientific, 37, 39, 209, 226, 268-9, 273-5, 335
Knuttila, Murray, 10
Korean War, 293
Kraft (company), 334
Kubik, Wendee, 8

L
Labour
  degradation of, 33, 36, 39
  deskilling of, 22
  division of, 20, 33-4
  intensification of, 28
  relationship to control, 32
  relationship to knowledge, 32
  and technology, 31-2
  training of, 24

Labour, manual, 18
Labour markets, 22
Labour movements, 22
Labour processes, 6, 9, 18-9, 21, 23, 25-6, 34, 36, 42, 138
  critical theory of, 15, 17, 20, 22, 24, 27-8
  job design, 20, 22, 25, 28
  job evaluation, 22-3, 27
  job reduction, 21, 28
  technology in, 91
Lakeside Packers, 313
Land Bank Commission, 149, 156, 158, 161
Land Bank Tenants Association, 160
Land co-operative, 89
Land Link Realty (Nebraska), 177-81, 183
Land ownership
  crisis in, 88
  See also Family farms, private ownership
Land Stewardship Programme
  Tillage 2000, 276
Land tenure system, 8, 87-8, 141, 146-7, 152-3, 155, 161-2
Land trust, 88-9
Land Utilisation Act, 152
Laycock, David, 256
Lazarus, R.S., 122
Leader-Post, The, 154
Lewis, Hal, 248
Lewontin, Richard, 307
Lighthall, D.R., 272, 275-6
Lind, Chris, 8, 128, 130
Lipset, S.M., 151, 166
Lloyd, Woodrow, 154
Locke, John, 83
Lorenz, F.O., 127
Lovins, Amory, 224

M
McArthur, Doug, 157
McCraig, James, 247, 249
McCrorie, James, 10
Macdonald, Sir John A., 295, 297
McDonough Inquiry, 198, 200
McDonough, Jim, 197, 199
McIver, R.M., 80
Mackintosh, W.A., 245
Macklin, Art, 128
McKnight, Bill, 114
Macmurray, John, 80-2, 86
MacPherson, Ian, 244
Males, Burt, 251
Manitoba
  agrarian movement in, 39
Manitoba Co-operative Wholesale Society, 247
Manitoba Pool Elevators, 313
Manitoba Telephone Company, 325
Manitoba Wheat Pool, 247, 325-6
Manure management, 314
Maple Leaf Foods (formerly Canada Packers), 313-4
Marchand, Senator, 78
Marshall Plan, 293, 299
Martell, G., 104
Market, global capital, 81-2, 84, 87
Market system, open, 112
Marketing associations, 42
Marketing policies, 74
Markets, 40, 294, 299, 312
Marx, Karl, 32-3, 290
Marxism, 83
Matador co-op farm, 166
Matheny, K.B., 121
Mayer, Charlie, 114
Meat packing industry, 305
Meat slaughtering and processing, 308, 313, 319
Melnyk, George, 244
Mercantilism, 290-1, 304
Messer, Jack, 155, 159, 162
Metis people, 141
Mills, Chris, 313
Miner, David, 158-9
Minnesota Corn Co-op, 318
Minnesota Corn Processor, 312
Mitchell, Broadus, 290
Mitchell, Don, 154-5
Molecular Genetics Section, 315
Monsanto chemical company, 41, 213-4, 307, 315-6
  GM canola, 221
  GM wheat, 221
  Roundup, 220, 221
Moore, Robert, 8
Moos, R.H., 121
Moose Jaw Packers, 313
Mozambican Food and Beverage Industry Workers Union (SINTIAB), 337
  workplace safety project, 337–9
Mulroney, Prime Minister Brian, 77, 82
Munro, G.B., 247
Murphy Family Farms, 318

N
National Academy of Sciences, 231
National Coalition for Family Farms and the Environment, 318
National Farm Machinery Company, 249-51, 253
National Farmers Organisation, 319
National Farmers Union (NFU), 108-10, 128, 146, 153, 162, 277-8, 311-2, 314-5, 317-9
  Farm Crisis committee, 113, 115
National Grain Limited, 216, 312
National Research Council (Saskatoon), 47, 315
National Research Council Agricultural Research Station, 315
National Transportation Act (1987), 193
National Transportation Agency, 202
Natural resources
  management of, 57-8

Natural Resources Defence Council, 318
Nebraska Center for Rural Affairs
  Land Link Program, 181-4
    legal and tax implications of, 174-5
    promotion of rural development, 173
    Starting Out Right Workshops, 176-7, 185
    Stewardship Legacy Fund, 183
    Stewardship Partnership Finance Fund, 180
    sustainable farm leases, 178-9
Nebraska Investment Finance Authority (NIFA), 181
North American Free Trade Agreement (NAFTA), 72, 82, 86, 115, 300, 308, 331
Northwest Area Foundation, 231
Novartis (company), 213, 307, 317
Noxious Weed Act, 215
Nun, Jose, 41

O
Offe, Claus, 40
Ohio Cultivator Company, 251
Oliver Farm Equipment, 252
Organic food system, 227, 232
Organic Producers Marketing Co-op, 227
Organic products
  consumer demand for, 227
  See also Farming, organic
Ontario Federation of Agriculture, 277-8
Ontario, southwestern
  tillage practices in, 267, 270, 274

P
Paavo, Adrian, 10
Palliser Triangle, 69, 71, 74
Palmer, Ronald J., 10, 261
Parker, M., 27
Parker, R.J.M., 246
Parknoy, R., 213
Partridge, A.E., 243
Partridge, E.A., 218
Pavlychenko, T.K., 211
Payne, Tom, 195
Pearlin, L.I., 122
Pepin, Jean Luc, 192
Pest control, 9
Pest control, organic, 229
Pesticide standards, 308
  See also Chemical pesticides
Peterson, Ed (Alberta), 246
Peterson, Sherwin, 191
Phalen, Terry, 247
Phillips, W.G., 244
Pioneer-Hi Bred company, 307, 316
Plant Biotechnology Institute, 315
Plant Gene Resource of Canada, 315
Polanyi, Karl, 290
Popple, W.F., 247, 249
Populism, 243, 323
Populist movement, 243-4, 253, 256
Pork Central, 314
Prairie Branch Line Rehabilitation Program, 192, 194
Prairie Farm Assistance Act (1939), 297
Prairie Farm Rehabilitation Act (PFRA), 152, 297
Prairie life
  volunteering as part of, 324
Prairie Rail Action Committee (PRAC), 194, 197
Prairie Swine Centre (Saskatoon), 314
Production, farm, See Farm production
Production, just in time, 27
Production, means of
  economic ownership of, 33, 39
Production relations, Japanese, 26-7
Production systems, lean, 27-8
Prosch, Allen, 9

Q
Quality circles, 25
Quality of Working Life, 23
Qu'Appelle Presbytery Rural Life Group, 113

R
Railroads *See* Railways
Railways
  Avonlea & Colony lines, 201, 203
  and farming, 9
  rail abandonment issue, 9, 191-4, 198-203
  regulation of, 196
  short line demonstration project, 200
  short line rail industry, 9, 113, 191, 193-4, 199-203
  union contracts in, 195
Rapeseed. *See* Canola
Reagan, President Ronald, 82
Regina conference, 5
Regina Manifesto (CCF), 256
Regina Research Station, 210
Regina, University of, 95
  conference (1995), 5
Regional development
  sustainable, 59, 61
Rehabilitation Program (federal), 195
Rennie, D.R., 224
Resource management
  sustainable, 56
Resource-based industries
sustainable development in, 55
Responsible autonomy, theory of, 25
Rhône-Poulonc (company) (France), 213-4
Rinehart, J., 19, 27
Robertson, D., 27
Robin's Foods, 313
Romanow, Roy, 154-5, 161, 191, 312, 314-5
Ronge, Volker, 40
Rostow, W.W., 290
Rowell/Sirois Report, The, 297
Royal Commission on Agriculture and Rural Life, 152-3

Royal Commission on Farm Machinery, 256
Rural Advancement Foundation International (RAFI), 318
Rural and Agricultural Action Co-operative Inc., 110
Rural communities, 4-5, 8, 10-11, 31, 34, 55-6, 58, 70, 98, 104, 142, 298, 338
  co-operative practices in, 143
  decision making in, 59
  decline in, 173, 329, 331
  economic diversification of, 63
  effect of rail-line abandonment on, 9, 202
  health and safety in, 339
  off-farm work in, 126
  social services in, 297
  survival of, 8, 59, 61, 70, 72
  sustainability of, 57-8, 60-1, 63, 339
  See also Farm communities, Social Background
Rural culture, 72
Rural families, See Farm families
Rural Transition Program, 108
Russell, Bob, 7
Ryerson, Stanley, 294

S

Sandoz (company) (Switzerland), 214
Saskatchewan
  AgChems use in, 208-9, 212, 215
  agribusiness in, 10, 312
  agriculture in, 7, 72, 87, 162, 309
  agriculture crisis in, 137, 141, 146-7, 151, 154, 289-90, 296, 301, 311
  biotechnology industry in, 315-6
  Department of Agriculture and Food, 163
  family-based farming in, 3, 10, 119, 137-8, 309-10, 312, 327
  farm communities in, 91, 102, 116, 153, 161
  farm co-operatives in, See Saskatchewan farm co-operatives
  farm health and safety, 336-7
  farm stress in, 130, 326
  farm women in, 127, 141, 143
  farmers' debt problems, 310
  genetically modified seeds in, 316-9
  homesteading in, 88
  immigrant workers in, 298, 314
  Land Bank Program, 147, 149, 155, 157-63
  land loss in, 87
  land reform in, 151-2, 155
  land tenure in, 140
  land transfer issue in, 154, 156-7, 163
  net farm income in, 311
  non-farming families, 123
  organic agriculture in, 223, 226-7, 231
  population decline in, 145-7, 162
  post-secondary educational institutions in, 96
  proposal to McDonough Inquiry, 199-200
  rail transportation in, 191-2, 195, 198, 200-3, 325-6
  rural crisis in, 69, 102, 116
  rural life in, 5, 11, 72, 88-9, 137, 142, 151, 298, 310
  size of farms, 144, 332
  social services in, 289
  soil quality in, 224, 231
  summerfallow on, 219, 228
  sustainable agriculture in, 223, 231
  trade unions in, 337
  Waffle group (NDP), 154, 158, 162
  wheat farming in, 137, 311
Saskatchewan Advisory Weed council (1947), 216
Saskatchewan Association of Rural Municipalities (SARM), 110, 216
Saskatchewan Catholic Bishops, 109-10
Saskatchewan Catholic Rural Life Committee, 113
Saskatchewan Chamber of Commerce, 110
Saskatchewan Continuing Education Program, 94
Saskatchewan Co-op Wheat Producers (now Saskatchewan Wheat Pool), 216-7
Saskatchewan Co-operative Wholesale Society, 247, 250
Saskatchewan Council for International Co-operation, 110
Saskatchewan Department of Agriculture and Food, 314
Saskatchewan Eco-network
  Biotechnology Working Group, 318
Saskatchewan Educational Television Network (SCN), 116
Saskatchewan Environmental Society, 319
Saskatchewan farm co-operatives
  as agrarian socialism, 147, 166-7
  contra to family ownership, 166, 172
  farmer owned, 309, 311
  history of, 165-6, 172
  member's share equity, 169-70
  as model of collective farm, 60-1, 166, 168
  as owners of raw materials, 171
  viability of, 166
Saskatchewan Farm Machinery Commission (1915), 245
Saskatchewan Farmers Movement, 324
  Medicare in, 325
Saskatchewan Farmers Union, 311
Saskatchewan Growth Fund, 314
Saskatchewan Institute of Applied Sciences and Technology (SIAST), 95
Saskatchewan Labour Federation, 110
Saskatchewan Land Bank, 8, 167-8, 172, 326-7
Saskatchewan Land Bank Commission, 168-72
Saskatchewan Legislature, Committee of, 246
Saskatchewan Minerals, 197
Saskatchewan Occupational Health and Safety Act (1971), 335
Saskatchewan Opportunities Corporation, 314
Saskatchewan Organic Development Council, 319
Saskatchewan Pork International (SPI), 314
Saskatchewan Railway Act, 191
Saskatchewan Research Council, 231

Saskatchewan Royal Commission on Agriculture and Rural Life (1954), 166-7
Saskatchewan School Trustee's Association, 110
Saskatchewan Teacher's Federation, 110
Saskatchewan, University of, 47, 95, 138, 146, 211, 216, 219, 238, 246, 248, 315
  Agriculture Economics Branch, 114
Saskatchewan Weed Council, 217
Saskatchewan Wheat Pool, 89, 110-1, 114, 131, 146, 200-3, 310-1, 313-4, 325-6, 336-7
  The Human Harvest, 109
  privatization of, 326
  stress management sessions, 109
Schaefer, J.A., 121
Schneiders (company), 313
Schools
  dropping out of, 104-5
  as learning places for skills, 100, 104
  urban bias of, 104
  See also Skills, Young people
Scientific management
  principles of, 21-3, 26-7
Sebastion, Rudi, 158
Seeding, timing of, 229
Senior Grain Transportation Committee (SGTC), 200-1
Sierra Club, The, 318
Simkin, R., 250, 252-3
Sismondo, S., 102
Skills, 15-6, 18, 20, 23-5, 91-2, 99, 167
  ability to control labour process, 32
  abstract reasoning, 26
  construction of, 23
  definitions of, 31-2, 36
  learning settings of, 99-103
  multi-skilling, 26
  upgrading of, 17, 19, 28
Slaughter, J., 27
Sleznick, Philip, 80, 81
Smith, Adam, 290
Smith, Allan E., 209
Smith, Stewart, 225
Smithfield Foods, 308, 313
Social background (in rural communities)
  and career choice, 93
  and education, 93
  of farm families, 93, 101
  of non-farm families, 93, 101
  as socializer of young, 104
Social change
  and work, 16, 19
Social Credit Party, 311
Social ecology, 57
Social re-design, 26
Society (*gesellschaft*), 80
Society, civil, 83, 85-6
Sociology of work, 15-6
Soil conservation, 228, 231, 283
Soil Conservation Club, 274, 277
Soil and Crop Improvement Association, 274, 276-7
Soil degradation, 42, 220, 260, 264, 274
Soil depletion, 224
Soil erosion, 230-1, 260, 264, 270, 273, 276, 317
Soil management, 10, 263-4, 270
Soil and Weather Environmental Enhancement Programme (SWEEP), 276
Solheim, C.A., 125
Southern Rails Co-operative, 191-2, 194, 196, 203
Soybean Producers Association, 277
Staggers Rail Act (US), 193
State agencies, 38, 40-1
Steiner, Rudolph, 227
Stelco Canada
  re-Taylorization of, 28
Stettler subdivision (Alberta), 195
Steuart, Davie, 157
Stevenson, Garf, 202
Stirling, Bob, 7, 9, 92
Strange, Marty, 9
Strategic choice theory, 15
Stress management programs, 130
Sustainability, *See* Agriculture, sustainability in; Environmental sustainability; Farm communities, sustainability of; Rural communities, sustainability of
Sustainable development, 55-6, 58, 62-3
Sustainable Farm Management Services Agreement (Nebraska), 178
Sweezy, Paul, 290, 293

T
Task Force on Agriculture (1967)
  Canadian Agriculture in the Seventies, 296, 298
Taylor, Frederick, 21, 27
  and scientific management, 21, 24-5, 27
Taylor, George, 154
Taylor, Jeffery, 39
Taylorism, 25-8
  labour process of, 21-3
Teachers' Federation, 153
Technology
  and agriculture, 39
  and agrochemicals, 9
  automated, 20
  and farm labour processes, 91
  relationship to farm labour, 31-2, 37, 40
  and skill upgrading, 19
  See also Agricultural chemicals, Labour, Skills
Technoscience
  as transforming society, 50
Templeman, W.G., 215
Terminator Technology, 307
Third World Network, 318
Thoits, P., 121
Thomas, H., 291-2
Thompson, Nancy, 9

Tillage practices, 9
  See also Farming practices
Toennies, Ferdinand
  Community and Society (1957), 80
Total Quality Management, 23, 26
Toyotism, 27
Tractor, automated, 263-5
Trade union movement, 25, 34, 338-9
Transport Canada, 200-1
Transportation system, 243
Trudeau, Pierre Elliott, 78
Tulloch, Douglas, 202-3
Turgeon Grain Inquiry Commission, 297
Tyrchniewicz, Dr. E.W., 334
Tyson Foods, 318

U
UN Conference on Environment and Development (1992), 317
UN Food and Agriculture Organization
Conference on Food Security (1997), 317
United Co-operatives of Ontario, 312
United Farmers of Canada (UFC), 151, 216-7
United Farmers of Manitoba, 138
United Farmers of Manitoba, Saskatchewan and Alberta, 327
United Grain Growers (UGG), 244-45, 254, 312, 325
  Co-operative Supplies Department, 244
United States National Institute of Occupational Safety and Health, 119
Universities
  as holders of knowledge, 38, 41
Unskilled operatives
  exploitation of, 16
Upshall, Eric, 313-5
Urban, Thomas, 305-6
US Department of Agriculture, 305, 307
US National Commission on Small Farms, 307
US National Farmers Union, 319
USDA Economic Research Service, 177

V
Veterans' Land Act, 152
Veterinary science, 95-8
Via Campesina, 317

W
Wage-effort bargain, 15-6, 21-2, 25, 27
Wages, living, 16, 19, 23
Walker, James & Lilly, 123-4
  The Human Harvest, 109
Wallerstein, Immanuel, 290
Warnock, John, 10
Water management, 10
Water quality, 271
Weed control
  chemical herbicides for, 217, 221
  crop rotation for, 9, 217-9, 221, 227-8
  summerfallow, 259, 263, 264
    methods of, 217, 221, 227-8, 230, 232-3, 260, 262-4, 315
  use of clean seed for, 9
  See also Farming practices, Farming techniques
Weed killers, hormone, 219, 221
Weed Laboratory (Sask), 211
Weibe, Nettie, 319
Weigel, D., 124
Weigel, R., 124
Weik, Ron, 203
Welsh, R., 269, 282
Wesson, Gib, 158-9
Western Canada Transportation Act, 311
Western Canada Wheat Growers Association (WCWGA), 311
Western Grain Transportation Act (WGTA), 192-3, 195, 198, 200, 312
Western Organisation of Resource Councils (WORC), 318-9
Western Producer, The, 112-3, 126, 310
Western Weed Conference (1947), 216
Wheat Board, See Canadian Wheat Board
Wheat economy, 297, 299
Wheat farming, 143, 214, 216, 228-9, 311
Wheat harvest (1986), 108
Wheat Pools, 34, 244, 247, 254, 324
Wheat prices, 142
White settler society, 141
Wilford, Allen
  Farm Gate Defence (1984), 113
Williams, C.C. (Red), 9
Winnipeg Grain Exchange, 297, 324
Wolf, Eric, 290
Womack, J., 27-8
Women Grain Growers of Saskatchewan, 138
Women's Legal, Education and Action Fund (LEAF), 127
Woodward, Joan, 16-7
Work
  automated environments for, 16, 18
  changes in skill requirements, 19
  deskilling of, 21, 23
  intensification of, 27-8
  redesign of, 28
  task performance in, 15, 20
  See also Deskilling
Work management
  Japanese systems of, 26
Work organisation, 22-4, 27
  and humane workplaces, 16
  and job reduction, 28
  patterns of, 15-6
  peak efficiencies in, 16
  problem-solving teams, 26
  scientific management in, 20, 24-5
  technological change in, 20
  and valorisation of capital, 20-1

Work-effort bargain, 24, 26
Workers' Compensation Board, 336
World Bank, 300
World Food Day, 318
World Food Summit (1996), 317
World Trade Organisation (WTO), 308, 317, 331
World War I, 292
World War II, 9, 36, 46, 166-7, 207, 211, 217, 219, 221, 223, 227, 244, 293, 296, 300, 303-5, 309, 311, 324

Y
Young people
  and choice of learning institutions, 94, 128, 145
  choices by gender, 92-4, 96
  in farm families, 94, 101
  as farmers, 88
  future plans of, 91-3, 95-8, 104, 128
  males, as school dropouts, 93, 103
  in non-farm familie's, 94, 101
  role in creation of knowledge, 97-9
  stress in, 127

Z
Zeneca (company), 213
Zero-till technology, 231-2
  See also Farming practices

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